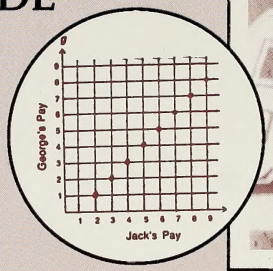
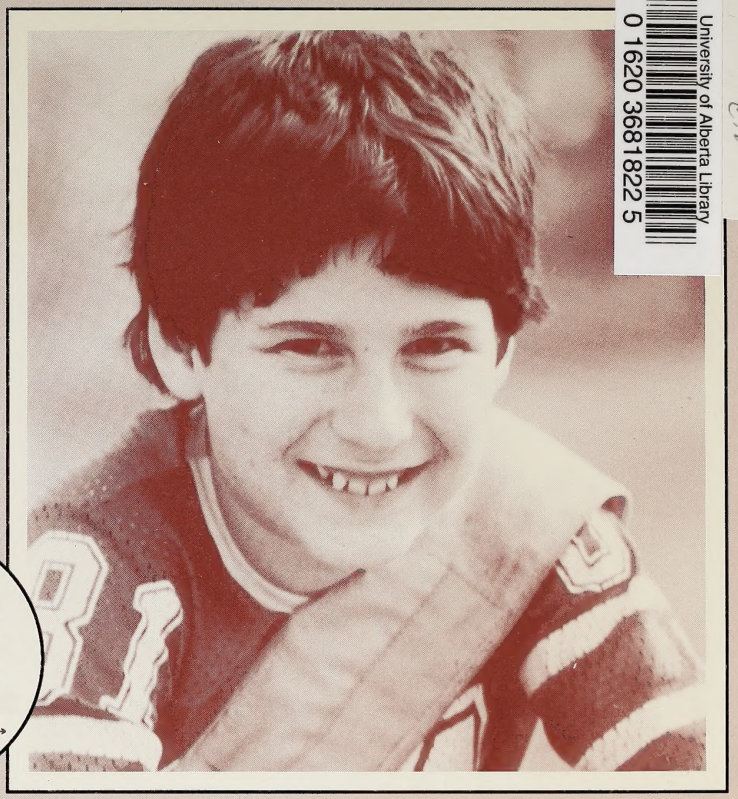
FRACTIONS and DECIMALS

MODULE 3

STUDENT SUPPORT GUIDE

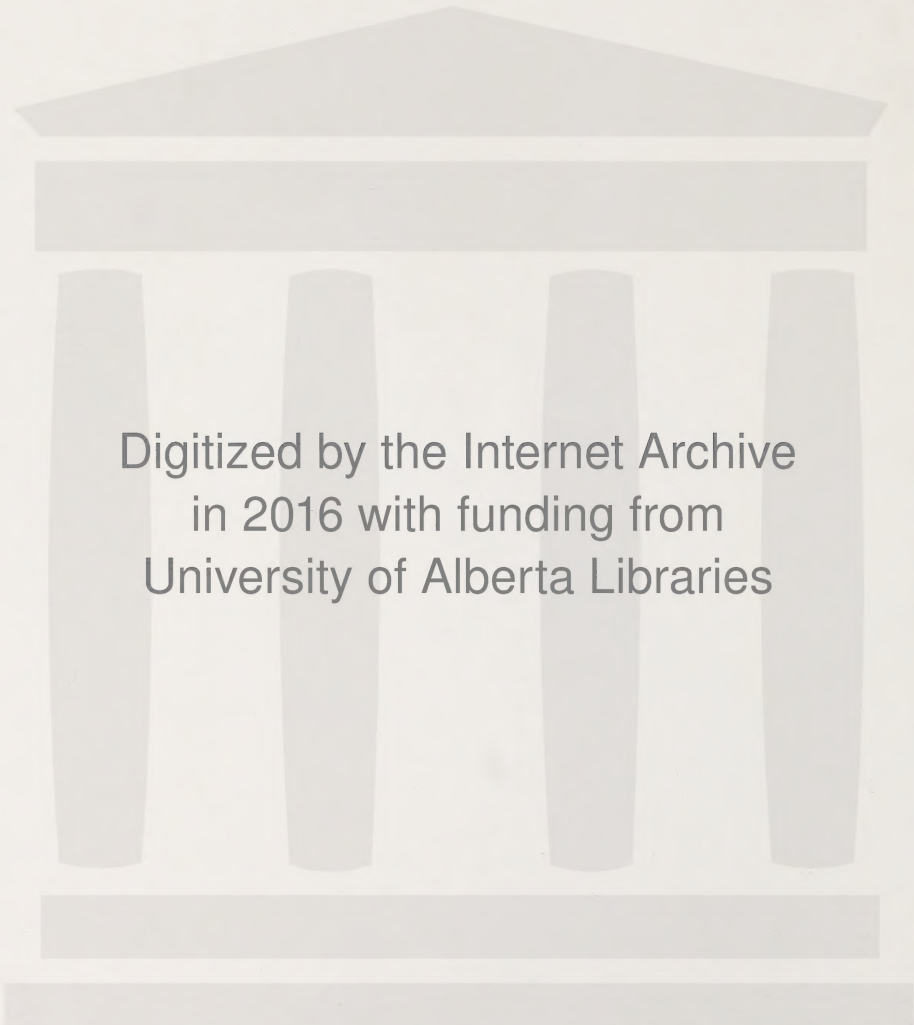




MATHEMATICS 7

Distance Learning

Alberta EDUCATION



Mathematics 7

Module 3: Fractions and Decimals

STUDENT SUPPORT GUIDE

Note to the Parent or Guardian

This Mathematics Student Support Guide contains answers to activities in the accompanying Module Booklet. It should be kept secure by the parent or guardian if the student is under 16 years of age. Younger students should not have access to this Guide except under supervision.

This Student Support Guide does not contain the answers to the accompanying Assignment Booklet. The Assignment Booklet will be graded by the student's distance education teacher.

Mathematics 7
Student Support Guide
Module 3
Fractions and Decimals
Alberta Distance Learning Centre
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CONTENTS

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MODULE INTRODUCTION

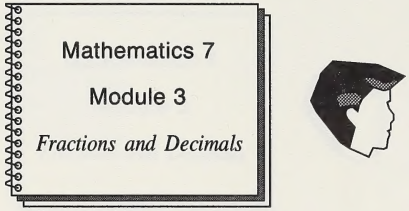
What Lies Ahead

In this module the student will be learning about fractions and decimal numbers. Sections 1 to 11 deal with fractions. Sections 12 to 20 deal with decimal numbers.

The module introduction will acquaint the student with the topic and the structure of the module.

Gathering Materials

For the module introduction the student will need these items.



Put away the Assignment Booklet for Module 3 in a secure place until it is needed.

Tell the student where the learning aids, videos and computer disks are stored.

Guiding the Student

- Have the student read the Module Introduction.
- Have the student preview the Module Booklet.
- Next discuss time management and evaluation with the student. See the suggestions on the next page.

The Learning Process

Each section of Module 3 deals with a different skill involving fractions and decimals. Sections have several activities.

- Learning Aids Activities or Introductory Activities
- Practice Activities
- Extra Practice
- Concluding Activities

Remind the student that they will not be expected to do all the activities. You will help them decide what to do.

Time Management

Decide how long the student will need to complete the module. An average student should spend about 6 weeks or 15 hours to complete the module. It is recommended that students spend no more than 1 hour at a time doing mathematics.

Evaluation

Explain that the grade on Module 3 is based on work in the Assignment Booklet. The module booklet will help prepare the student for the assignment booklet.

GETTING SET

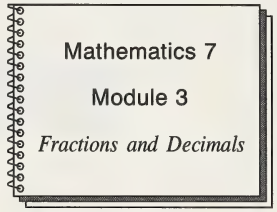
What Lies Ahead

These are the skills to be tested in this section.

- interpreting a fraction
- using multiplication and division to find equivalent fractions
- expressing fractions in simplest form
- expressing amounts as mixed numbers and fractions greater than 1
- expressing decimal numbers as fractions in simplest form
- expressing fractions as decimal numbers
- comparing and ordering fractions
- adding and subtracting fractions with common and different denominators
- multiplying and dividing fractions

Gathering Materials

For this section the student will need these items.



Guiding the Student

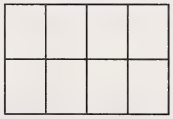
- Have the student turn to Section 1 in the Module Booklet and read the "What Lies Ahead" box and "Working Together."
- Have the student do the Pretest. Then help check the answers. It may not be necessary to correct errors. See the last page of this section for further directions.

Pretest

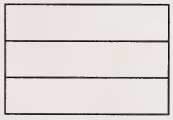
1. Colour each figure to show the fraction given.

a. 

$\frac{1}{4}$

b. 

$\frac{7}{8}$

c. 

$\frac{2}{3}$

d. 

$\frac{1}{2}$

Suggested Answers

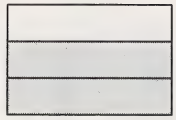
1. Colour each figure to show the fraction given.

a. 

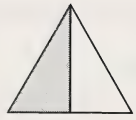
$\frac{1}{4}$

b. 

$\frac{7}{8}$

c. 

$\frac{2}{3}$

d. 

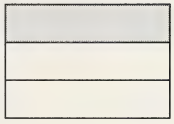
$\frac{1}{2}$

2. In each of the following what fraction of the figure is shaded?

a. 

b. 

c. 

d. 

2. a. $\frac{3}{4}$

b. $\frac{2}{5}$

c. $\frac{5}{6}$

d. $\frac{1}{3}$

3. In each of the following give two equivalent fractions.

   a. $\frac{1}{3}$

   b. $\frac{3}{5}$

   c. $\frac{3}{4}$

   d. $\frac{2}{7}$

3. a. $\frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12}$, and so on

   b. $\frac{3}{5} = \frac{6}{10} = \frac{9}{15} = \frac{12}{20}$, and so on

   c. $\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{12}{16}$, and so on

   d. $\frac{2}{7} = \frac{4}{14} = \frac{6}{21} = \frac{8}{28}$, and so on

4. Express each of these in lowest terms.

   a. 5 students as a fraction of a group of 25 students

   b. 30 minutes as a fraction 60 minutes

   c. 25¢ as a fraction of 100¢

   d. 13 cards as a fraction of a deck of 52 cards

4. a. $\frac{5}{25} = \frac{1}{5}$

   b. $\frac{30}{60} = \frac{1}{2}$

   c. $\frac{25}{100} = \frac{1}{4}$

   d. $\frac{13}{52} = \frac{1}{4}$

5. Express each of these values as a mixed number.

a. $\frac{20}{6}$

b. $\frac{10}{3}$

c. $\frac{25}{6}$

d. $\frac{7}{5}$

6. Express each of these mixed numbers as a fraction.

a. $1\frac{1}{2}$

b. $2\frac{3}{10}$

c. $3\frac{1}{3}$

d. $4\frac{3}{4}$

5. a. $3\frac{2}{6} = 3\frac{1}{3}$

b. $3\frac{1}{3}$

c. $4\frac{1}{6}$

d. $1\frac{2}{5}$

6. a. $\frac{3}{2}$

b. $\frac{23}{10}$

c. $\frac{10}{3}$

d. $\frac{19}{4}$

7. Use $<$, $>$, or $=$ to make a true statement for each of these.

a. $\frac{3}{5}$ ◯ $\frac{2}{5}$

b. $\frac{1}{3}$ ◯ $\frac{1}{6}$

c. $\frac{3}{4}$ ◯ $\frac{4}{5}$

d. $\frac{2}{3}$ ◯ $\frac{4}{6}$

7. a. $\frac{3}{5} > \frac{2}{5}$

b. $\frac{1}{3} > \frac{1}{6}$

c. $\frac{3}{4} < \frac{4}{5}$

d. $\frac{2}{3} = \frac{4}{6}$

8. Express each of these as a decimal number.

   a. $\frac{1}{4}$

   b. $\frac{7}{10}$

   c. $1\frac{1}{5}$

   d. $2\frac{1}{2}$

8. a. $\frac{1}{4} = 0.25$

   b. $\frac{7}{10} = 0.7$

   c. $1\frac{1}{5} = 1.2$

   d. $2\frac{1}{2} = 2.5$

9. Express each of these as a fraction in lowest terms.

   a. 0.8

   b. 0.75

   c. 1.8

   d. 0.04

9. a. $0.8 = \frac{8}{10} = \frac{4}{5}$

   b. $0.75 = \frac{75}{100} = \frac{3}{4}$

   c. $1.8 = 1\frac{8}{10} = 1\frac{4}{5}$

   d. $0.04 = \frac{4}{100} = \frac{1}{25}$

10. Use $>$, $<$, or $=$ to make a true statement for each of the following.

a. $\frac{1}{3}$ ◯ 0.3

b. 1.25 ◯ $\frac{11}{8}$

c. $\frac{1}{10}$ ◯ 0.15

d. 0.2 ◯ $\frac{1}{5}$

10. a. $\frac{1}{3} > 0.3$

b. $1.25 < \frac{11}{8}$

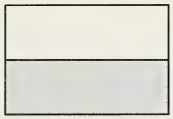
c. $\frac{1}{10} < 0.15$

d. $0.2 = \frac{1}{5}$

11. For each of the following complete the diagram and write a number sentence.

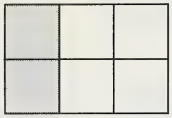
a.

and

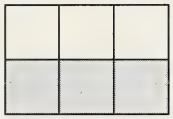


$\frac{1}{3} + \frac{1}{2}$

→

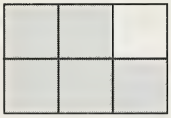


and



$= \frac{2}{6} + \frac{3}{6}$

→



$= \frac{5}{6}$

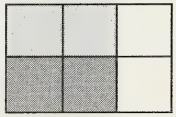
b.

$$\frac{3}{4} - \frac{1}{2}$$

$$= \frac{3}{4} - \frac{2}{4}$$

$$= \frac{1}{4}$$

c. one half of 

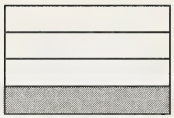
→ 

→ 

$= \frac{1}{3}$

d. three fourths of 

→ 

→ 

c. $\frac{1}{2} \times \frac{2}{3}$

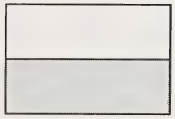
$= \frac{2}{6}$

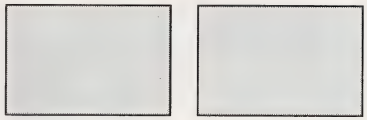
$= \frac{1}{3}$

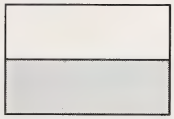
d. $\frac{3}{4} \times \frac{1}{3}$

$= \frac{3}{12}$

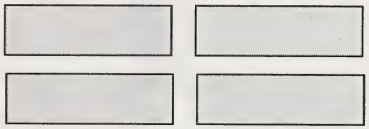
$= \frac{1}{4}$

e. How many  are there

in  ?

→ How many  are there

in  ?

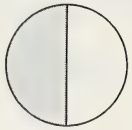
→ 

e. $2 \div \frac{1}{2}$

$= \frac{4}{2} \div \frac{1}{2}$

$= 4$

f. How many  are there

in  ?

→ How many  are there

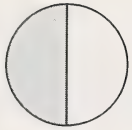
in  ?

→ 

f. $\frac{1}{2} \div \frac{1}{3}$

$= \frac{3}{6} \div \frac{2}{6}$

$= 1\frac{1}{2}$

g. How many  are there

in  ?

→ How many  are there

in  ?

→ 

g. $\frac{1}{3} \div \frac{1}{2}$

$= \frac{2}{6} \div \frac{3}{6}$

$= \frac{2}{3}$

Guiding the Student

After checking the answers, compare the student's results with the following chart. The chart lists the skills covered in the Pretest and the section in which the skill will be taught.

Question	Skill	Section
1-2, 16	Interpreting a fraction	2
3	Writing equivalent fractions	3
4	Writing fractions in simplest form	3
5-6	Writing fractions as mixed numbers and vice versa	4
7, 10	Comparing and ordering fractions and decimal numbers	6
8-9	Writing fractions as decimal numbers and vice versa	5
11a	Adding fractions	7
11b	Subtracting fractions	8
11c, d	Multiplying fractions	9
11e, f, g	Dividing fractions	10

Help the student decide what to do next. It is recommended that students do most of the sections which correspond to the questions with which they experienced difficulties and only the concluding activities in the sections which correspond to the questions with which they experienced success.

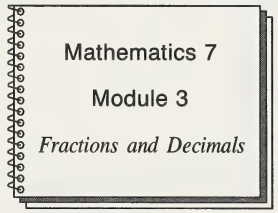
INTERPRETING FRACTIONS

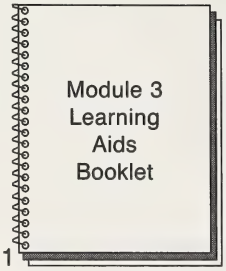
What Lies Ahead

In this section the student will learn to interpret a fraction.

Gathering Materials

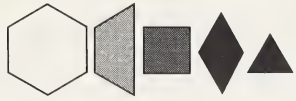
The student will need the following items.





(optional)

Fraction Factory, Program 1 (Fraction and Sets)



Wooden or plastic Pattern Blocks (or cut out the paper pattern blocks at the end of the Learning Aids Booklet). Tell the student to save the blocks. They are required elsewhere in this module and in other modules.

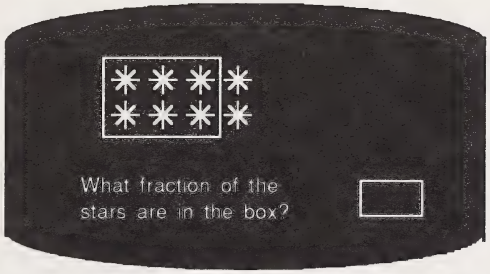
Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 2 of the Module Booklet.
- Then have the student read "Working Together", do the Learning Aids Activities, Exercise A in the Learning Aids Booklet, and check the answers.
- Next have the student return to Section 2 of the Module Booklet, read "Working Together" and do the Practice Activities.
- Afterwards help the student check the answers.

Practice Activities

Computer Alternative

1. Do Program 1 (Fraction and Sets) on the *Fraction Factory* disk. To select this program press the space bar when this picture appears on the screen.



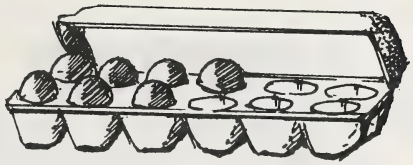
Suggested Answers

1. Computer checked.

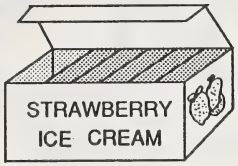
Print Alternative

2. What fraction of each of these containers is full? What fraction of each of these containers is empty?

a.

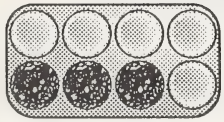


b.



c.

d.



2. a. $\frac{7}{12}$ of the egg carton is full.

b. $\frac{5}{6}$ of the ice cream box is full.

c. $\frac{11}{24}$ of the honey box is full.

d. $\frac{3}{8}$ of the muffin pan is full.

3. A pie is shared by 6 people. What fraction of the pie does each person get?

3. Each person gets $\frac{1}{6}$ of the pie.

4. A bag of cookies is shared by seven people. What fraction of the bag of cookies does each person get?

4. Each person gets $\frac{1}{7}$ of the cookies.

5. The $1 000 000 lottery is split among 4 people. What fraction of the lottery does each person get?

5. Each person gets $\frac{1}{4}$ of the lottery money.

Guiding the Student

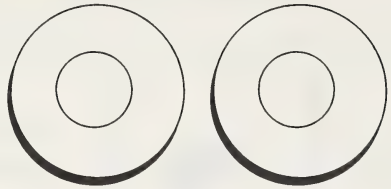
- Have the student do the Concluding Activities
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

Concluding Activities

How can you cut a doughnut into eighths with three cuts of a knife. The pieces must be of equal size. [1]

Suggested Answers

Cut the doughnut once horizontally as shown.



Place the 2 pieces together and cut the doughnut twice vertically as shown.

If this is done with care, you will have 8 equal pieces.

[1] *The Arithmetic Teacher,* May, 1987.

EQUIVALENT FRACTIONS

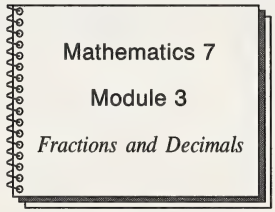
What Lies Ahead

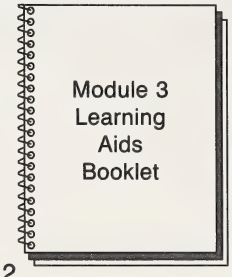
In this section the student will learn these skills.

- interpreting equivalent fractions
- using multiplication and division to find equivalent fractions
- expressing fractions in simplest form

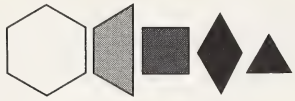
Gathering Materials

In this section the student will need the following items.





Fraction Factory Program 2
"Equivalent Fractions" SRA Computer Drill and Instruction " Fractions" Lesson 4



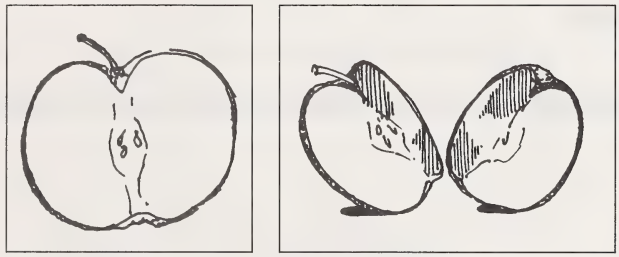
Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 3 of the Module Booklet.
- Then have the student read "Working Together," do the Learning Aids Activities, Exercise B in the Learning Aids Booklet, and check the answers.
- Next have the student return to Section 3 of the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check the answers.

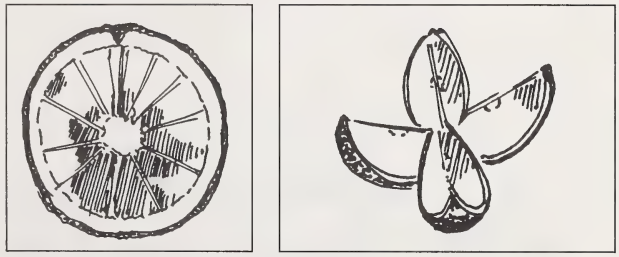
Practice Activities

1. Write two equivalent fractions for each pair of pictures shown.

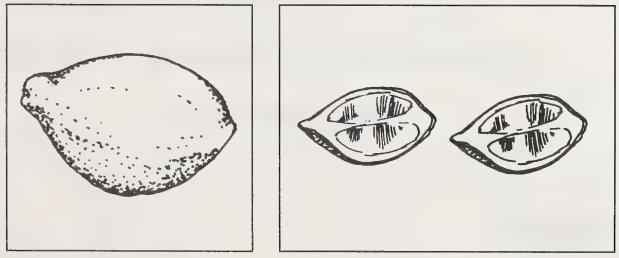
a.



b.



c.



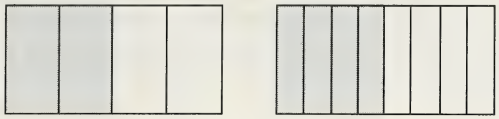
Suggested Answers

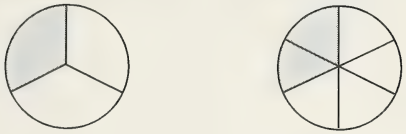
1. a. $\frac{1}{2} = \frac{2}{4}$

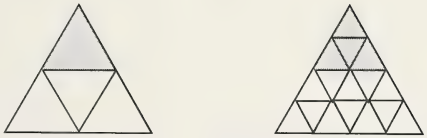
b. $\frac{1}{2} = \frac{4}{8}$

c. $1 = \frac{2}{2}$

2. Write equivalent fractions for each pair of diagrams shown.

a. 

b. 

c. 

2. a. $\frac{2}{4} = \frac{4}{8}$

b. $\frac{1}{3} = \frac{2}{6}$

c. $\frac{1}{4} = \frac{4}{16}$

3. Give four equivalent fractions to describe the part of the clock shaded.

3. Answers may vary as long as the basic fraction in each case is $\frac{5}{12}$.

$$\frac{5}{12} = \frac{25}{60} = \frac{150}{360} = \frac{1500}{3600}$$

4. Complete so that you get equivalent fractions in each case.

a. $\frac{1}{5} = \frac{\square}{25}$

b. $\frac{12}{15} = \frac{\square}{5}$

c. $\frac{3}{8} = \frac{\square}{24}$

d. $\frac{18}{12} = \frac{3}{\square}$

4. a. $\frac{1}{5} \overset{\times 5}{=} \frac{\boxed{5}}{25}$

b. $\frac{12}{15} \overset{\div 3}{=} \frac{\boxed{4}}{5}$

c. $\frac{3}{8} \overset{\times 3}{=} \frac{\boxed{9}}{24}$

d. $\frac{18}{12} \overset{\div 6}{=} \frac{3}{\boxed{2}}$

Guiding the Student

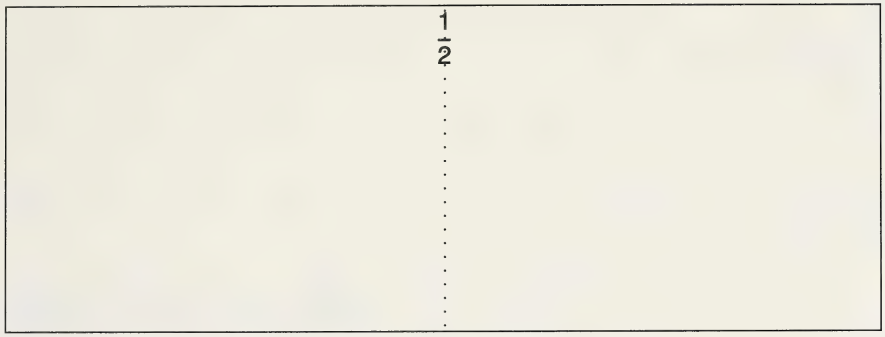
- If the student had difficulty with the Practice Activities, assign the Extra Practice. Afterwards help the student check the answers and correct any errors.
- If the student had success with the Practice Activities, assign the Concluding Activities. Afterwards help the student check the answers and correct any errors.

Extra Practice

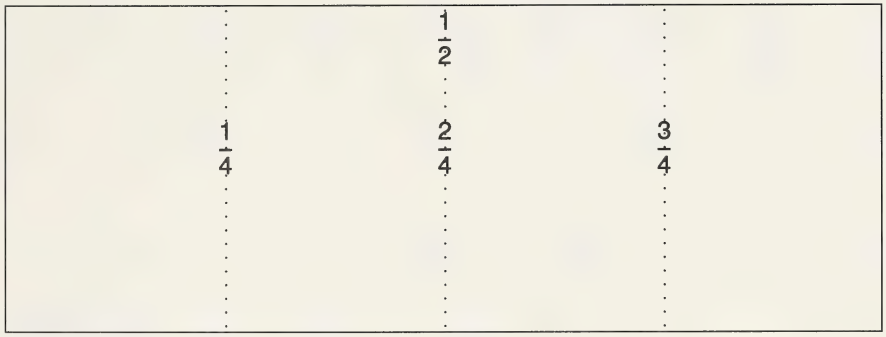
Suggested Answers

1. Make number lines by folding paper.

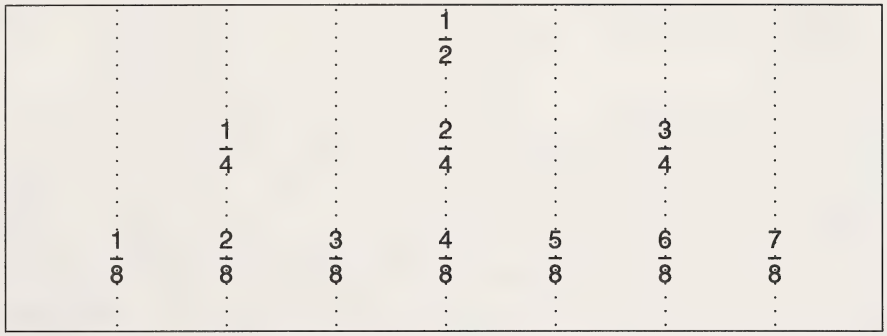
   a. Fold a piece of paper in half as shown and mark the folds.



   b. Fold the folded piece of paper in half again and mark the folds.



c. Fold the folded piece of paper in half again and mark the folds.



d. Using the paper you folded, give all the equivalent fractions for each of the following.

$\frac{1}{4} =$

$\frac{1}{2} =$

$\frac{3}{4} =$

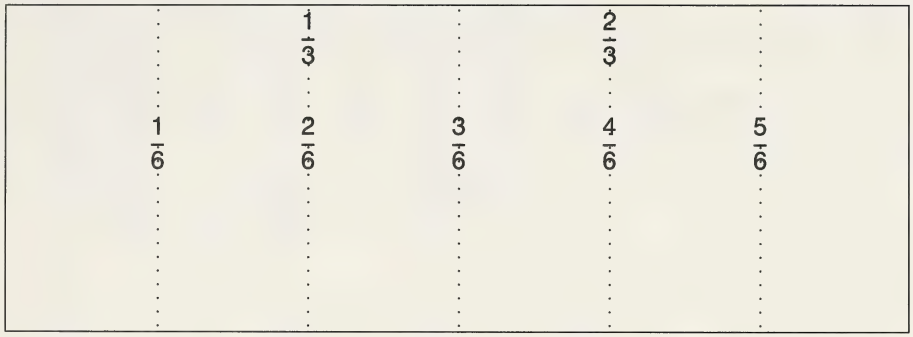
d. $\frac{1}{4} = \frac{2}{8}$

$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$

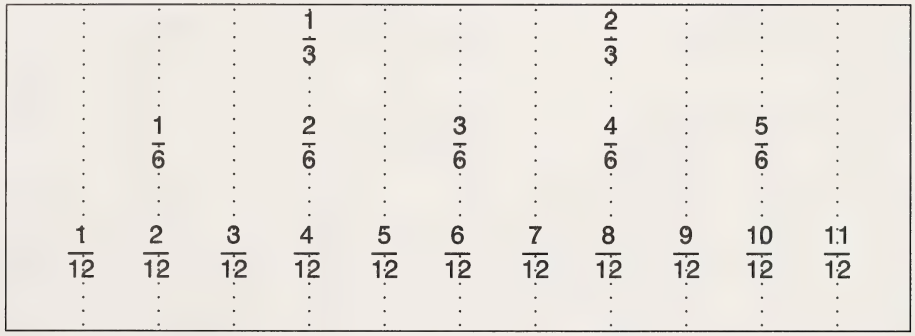
$\frac{3}{4} = \frac{6}{8}$

3. a. Fold a second piece of paper in thirds and mark the folds.

b. Fold the folded piece of paper in half and mark the folds.



c. Fold the folded piece of paper in half again and mark the folds.



d. Using the paper you folded, give all the equivalent fractions for each of the following.

$\frac{1}{6} =$

$\frac{1}{3} =$

$\frac{3}{6} =$

$\frac{2}{3} =$

$\frac{5}{6} =$

d. $\frac{1}{6} = \frac{2}{12}$

$\frac{1}{3} = \frac{2}{6} = \frac{4}{12}$

$\frac{3}{6} = \frac{6}{12}$

$\frac{2}{3} = \frac{4}{6} = \frac{8}{12}$

$\frac{5}{6} = \frac{10}{12}$

4. Cut out the multiple boards, found in the Appendix, at the end of this module booklet or make multiple boards out of popsicle sticks.

   Then give three equivalent fractions for each of the following.

   a. $\frac{1}{3}$

   b. $\frac{8}{10}$

   c. $\frac{8}{3}$

   d. $\frac{5}{1}$

4. a. $\frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{16}$

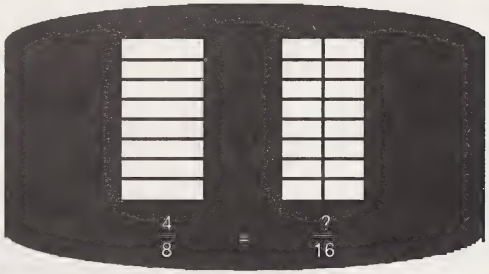
   b. $\frac{8}{10} = \frac{4}{5} = \frac{12}{15} = \frac{16}{20}$

   c. $\frac{8}{3} = \frac{16}{6} = \frac{24}{9} = \frac{32}{12}$

   d. $\frac{5}{1} = \frac{10}{2} = \frac{15}{3} = \frac{20}{4}$

Computer Alternative

5. Do Program 2 "Equivalent Fractions" on the *Fraction Factory* disk. To select this program press the space bar when this picture appears on the screen.

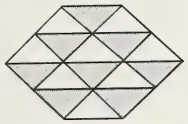


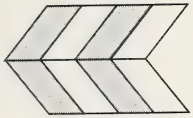
Do Lesson 4 on the "Fractions" disk from the *Computer Drill and Instruction: Mathematics, Level D* (*SRA*). Remember for this program if you make an error or need help, hold down the SHIFT key and press the ? key.

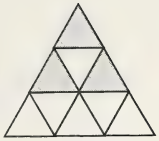
5. Computer checked.

Print Alternative

6. Give two equivalent fractions that describe the shaded parts.

a. 

b. 

c. 

d. 

6. a. $\frac{8}{16} = \frac{1}{2}$

b. $\frac{4}{8} = \frac{1}{2}$

c. $\frac{3}{9} = \frac{1}{3}$

d. $\frac{3}{15} = \frac{1}{5}$

7. Write three equivalent fractions for each of the following.

a. $\frac{1}{4}$

b. $\frac{2}{5}$

c. $\frac{3}{6}$

d. $\frac{1}{3}$

7. a. $\frac{1}{4} = \frac{2}{8} = \frac{3}{12} = \frac{4}{16}$

b. $\frac{2}{5} = \frac{4}{10} = \frac{6}{15} = \frac{8}{20}$

c. $\frac{3}{6} = \frac{1}{2} = \frac{2}{4} = \frac{5}{10}$

d. $\frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12}$

8. Complete each of the following.

a. $\frac{1}{3} = \frac{\square}{9}$

b. $\frac{12}{16} = \frac{3}{\square}$

c. $\frac{5}{8} = \frac{\square}{40}$

d. $\frac{12}{21} = \frac{4}{\square}$

a. $\frac{1}{3} \overset{\times 3}{=} \frac{\boxed{3}}{9}$

b. $\frac{12}{16} \overset{\div 4}{=} \frac{3}{\boxed{4}}$

c. $\frac{5}{8} \overset{\times 5}{=} \frac{\boxed{25}}{40}$

d. $\frac{12}{21} \overset{\div 3}{=} \frac{4}{\boxed{7}}$

Guiding the Student

- Have the student do the Concluding Activities.
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

Concluding Activities

Write the following fractions in lowest terms using the prime-factors method.

1. $\frac{6}{15}$

2. $\frac{18}{24}$

3. $\frac{15}{36}$

4. $\frac{36}{42}$

5. $\frac{42}{60}$

6. $\frac{60}{70}$

Suggested Answers

1. $\frac{6}{15} = \frac{2 \times \cancel{3}^{1}}{\cancel{3}_{1} \times 5} = \frac{2}{5}$

2. $\frac{18}{24} = \frac{\cancel{2}^{1} \times 3 \times \cancel{3}^{1}}{\cancel{2}_{1} \times 2 \times 2 \times \cancel{3}_{1}} = \frac{3}{4}$

3. $\frac{15}{36} = \frac{\cancel{3}^{1} \times 5}{\cancel{3}_{1} \times 3 \times 2 \times 2} = \frac{5}{12}$

4. $\frac{36}{42} = \frac{\cancel{2}^{1} \times 2 \times \cancel{3}^{1} \times 3}{\cancel{2}_{1} \times \cancel{3}_{1} \times 7} = \frac{6}{7}$

5. $\frac{42}{60} = \frac{\cancel{2}^{1} \times \cancel{3}^{1} \times 7}{\cancel{2}_{1} \times 2 \times \cancel{3}_{1} \times 5} = \frac{7}{10}$

6. $\frac{60}{70} = \frac{\cancel{2}^{1} \times 2 \times 3 \times \cancel{5}^{1}}{\cancel{2}_{1} \times \cancel{5}_{1} \times 7} = \frac{6}{7}$

FRACTIONS AND MIXED NUMBERS

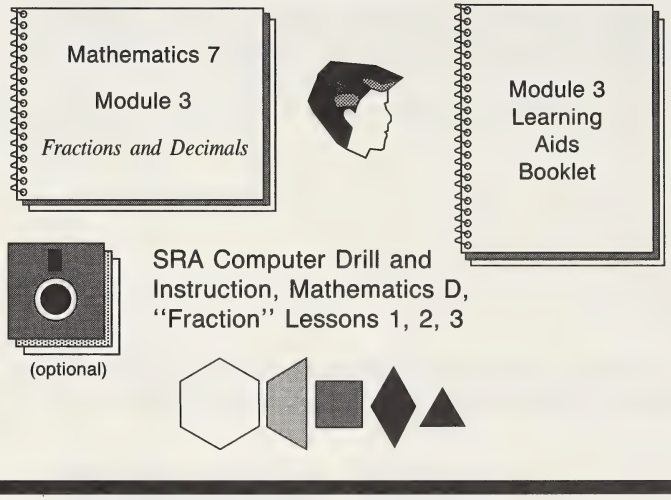
What Lies Ahead

In this section the student will learn these skills.

- expressing amounts greater than 1 in fraction form
- expressing amounts greater than 1 in mixed number form.

Gathering Materials

The student will need these items.



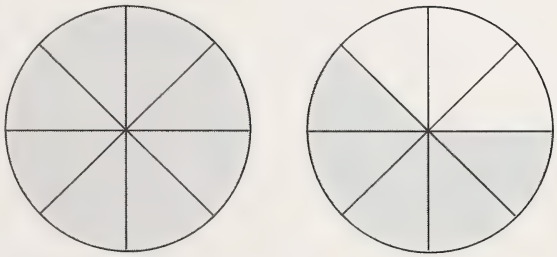
Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 4 of the Module Booklet.
- Then have the student read "Working Together," do the Learning Aids Activities, Exercise C in the Learning Aids Booklet, and check the answers.
- Next have the student return to Section 4 of the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check the answers.

Practice Activities

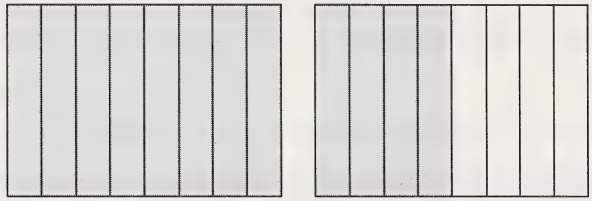
1. Colour $\frac{12}{8}$ of the rectangle on the right.

2. What fraction is shaded?



3. Eddie made 12 muffins using two 8-muffin trays. What fraction of the two trays did he use?

Suggest Answers

1. 

2. $\frac{13}{8}$ of the two circles are shaded. In other words, 1 whole circle and $\frac{5}{8}$ of another circle are shaded. So $1\frac{5}{8}$ circles are shaded.

3. Eddie used $\frac{12}{8}$ or $\frac{3}{2}$ of the two muffin trays. In other words, Eddie used 1 whole muffin tray and $\frac{1}{2}$ of another muffin tray. So $1\frac{1}{2}$ muffin trays were used.

4. Linda ordered 8 books. She received 9 books. What fraction of her books did she receive?

5. What fraction of a full turn does the second hand on a watch make in 140 seconds?

6. Express each mixed number as an improper fraction.

   a. $2\frac{1}{3}$

   b. $1\frac{1}{4}$

   c. $3\frac{1}{2}$

   d. $5\frac{3}{10}$

4. Linda received $\frac{9}{8}$ of the books she ordered. In other words, Linda received 1 whole set of books and $\frac{1}{8}$ of another set. So she received $1\frac{1}{8}$ sets of books.

5. The second hand makes $\frac{140}{60}$ or $\frac{7}{3}$ of a full turn. In other words, the second hand makes 2 full turns and $\frac{1}{3}$ of another full turn. So the watch makes $2\frac{1}{3}$ full turns in 140 seconds.

6. a. $2\frac{1}{3} = \frac{7}{3}$

   b. $1\frac{1}{4} = \frac{5}{4}$

   c. $3\frac{1}{2} = \frac{7}{2}$

   d. $5\frac{3}{10} = \frac{53}{10}$

7. Express each of these improper fractions as a mixed number.

a. $\frac{11}{8}$

b. $\frac{14}{5}$

c. $\frac{15}{11}$

d. $\frac{22}{7}$

7. a. $\frac{11}{8} = 1\frac{3}{8}$

b. $\frac{14}{5} = 2\frac{4}{5}$

c. $\frac{15}{11} = 1\frac{4}{11}$

d. $\frac{22}{7} = 3\frac{1}{7}$

8. Express each of these improper fractions as a mixed number in lowest terms.

a. $\frac{8}{6}$

b. $\frac{20}{12}$

c. $\frac{30}{8}$

d. $\frac{36}{10}$

8. a. $\frac{8}{6} = 1\frac{2}{6} = 1\frac{1}{3}$

b. $\frac{20}{12} = 1\frac{8}{12} = 1\frac{2}{3}$

c. $\frac{30}{8} = 3\frac{6}{8} = 3\frac{3}{4}$

d. $\frac{36}{10} = 3\frac{6}{10} = 3\frac{3}{5}$

Guiding the Student

- If the student had difficulty with the Practice Activities, assign the Extra Practice. Afterwards help the student check the answers.
- If the student had success with the Practice Activities, assign the Concluding Activities. Afterwards help the student check the answers.

Extra Practice

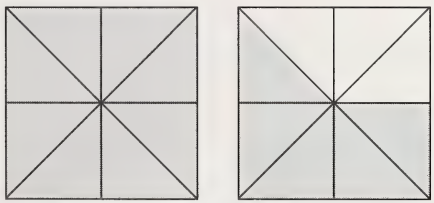
Computer Alternative

1. Do Lessons 1, 2, and 3 on the "Fraction" disk of *Computer Drill and Instruction: Mathematics, Level D* (*SRA*). Remember if you need help or have an error hold down the SHIFT key and press the [?] key.

Print Alternative

2. Shade $\frac{11}{8}$ of the circles at the right.

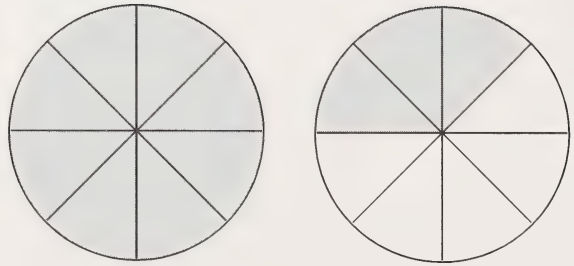
3. What fraction of these squares are shaded? Use the improper fraction form.



4. Express the fractions in Questions 2 and 3 as mixed numbers.

Suggested Answers

1. Computer checked.

2. 

3. $\frac{13}{8}$ of the squares are shaded.

4. $\frac{11}{8} = 1\frac{3}{8}$

   $\frac{13}{8} = 1\frac{5}{8}$

5. Express each of these improper fractions as a mixed number.

a. $\frac{13}{5}$

b. $\frac{22}{3}$

c. $\frac{27}{4}$

d. $\frac{15}{8}$

5. a. $\frac{13}{5} = 2\frac{3}{5}$

b. $\frac{22}{3} = 7\frac{1}{3}$

c. $\frac{27}{4} = 6\frac{3}{4}$

d. $\frac{15}{8} = 1\frac{7}{8}$

6. Express each of these mixed numbers as an improper fraction.

a. $1\frac{1}{2}$

b. $2\frac{3}{4}$

c. $3\frac{1}{3}$

d. $4\frac{7}{8}$

6. a. $1\frac{1}{2} = \frac{3}{2}$

b. $2\frac{3}{4} = \frac{11}{4}$

c. $3\frac{1}{3} = \frac{10}{3}$

d. $4\frac{7}{8} = \frac{39}{8}$

7. Express each of these improper fractions as a mixed number in lowest terms.

a. $\frac{20}{6}$

b. $\frac{45}{25}$

c. $\frac{84}{20}$

d. $\frac{36}{8}$

7. a. $\frac{20}{6} = 3\frac{2}{6} = 3\frac{1}{3}$

b. $\frac{45}{25} = 1\frac{20}{25} = 1\frac{4}{5}$

c. $\frac{84}{20} = 4\frac{4}{20} = 4\frac{1}{5}$

d. $\frac{36}{8} = 4\frac{4}{8} = 4\frac{1}{2}$

Guiding the Student

- Have the student do the Concluding Activities.
- Afterwards help the student check the answers.

Concluding Activities

There are 16 slices of bread in one loaf of bread.

1. How many slices are there in $2\frac{1}{4}$ loaves?

2. How many peanut butter sandwiches can be made from $2\frac{1}{4}$ loaves?

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Suggested Answers to Concluding Activities

1. $16 + 16 + 4 = 36$

   There are 36 slices in $2\frac{1}{4}$ loaves of bread.

2. $\frac{36}{2} = 18$

   It is possible to make 18 peanut butter sandwiches from $2\frac{1}{4}$ loaves of bread.

FRACTIONS AND DECIMAL NUMBERS

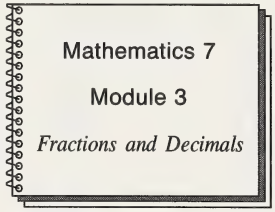
What Lies Ahead

In this section the student will learn these skills.

- expressing decimal numbers as fractions in simplest form
- expressing fractions as decimal numbers

Gathering Materials

The student will need these items.



SRA Computer Drill and Instruction, Mathematics Level D, "Decimals" Lessons 2 and 6

Math Works "Relating Decimals and Fractions"

Guiding the Student

- Have the student read the "What Lies Ahead" box of Section 5 in the Module Booklet.
- Then have the student read "Working Together." Have the student view the video if possible.
- Next have the student do the Practice Activities. Afterwards help the student check the answers and correct any errors.

Practice Activities

1. Express each of these decimal numbers as a fraction or a mixed number in lowest terms.

   a. 0.8

   b. 0.5

   c. 0.75

   d. 3.25

2. Express each of these fractions as a decimal number.

   a. $\frac{3}{10}$

   b. $\frac{3}{4}$

   c. $\frac{5}{8}$

Suggested Answers

1. a. $0.8 = \frac{8}{10} = \frac{4}{5}$

   b. $0.5 = \frac{5}{10} = \frac{1}{2}$

   c. $0.75 = \frac{75}{100} = \frac{3}{4}$

   d. $3.25 = 3\frac{25}{100} = 3\frac{1}{4}$

2. a. $\frac{3}{10} = 0.3$

   b. $\frac{3}{4} = \frac{75}{100} = 0.75$

   c. $\frac{5}{8} = \frac{625}{1000} = 0.625$

d. $1\frac{3}{5}$

e. $\frac{2}{3}$

f. $\frac{4}{9}$

g. $\frac{6}{11}$

h. $1\frac{1}{6}$

d. $1\frac{3}{5} = 1\frac{6}{10} = 1.6$

e. $\frac{2}{3} = 0.\dot{6}$

f. $\frac{4}{9} = 0.\dot{4}$

g. $\frac{6}{11} = 0.\dot{5}\dot{4}$

h. $1\frac{1}{6} = 1.1\dot{6}$

3. Express each of the following as a fraction or as a mixed number in lowest terms.

a. 0.7

b. 0.6

c. 0.25

d. 1.3

e. 2.8

f. 4.05

g. 0.375

h. 3.125

3. a. $0.7 = \frac{7}{10}$

b. $0.6 = \frac{6}{10} = \frac{3}{5}$

c. $0.25 = \frac{25}{100} = \frac{1}{4}$

d. $1.3 = 1\frac{3}{10}$

e. $2.8 = 2\frac{8}{10} = 2\frac{4}{5}$

f. $4.05 = 4\frac{5}{100} = 4\frac{1}{20}$

g. $0.375 = \frac{375}{1000} = \frac{3}{8}$

h. $3.125 = 3\frac{125}{1000} = 3\frac{1}{8}$

Guiding the Student

- If the student had difficulty with the Practice Activities, assign the Extra Practice. Afterwards help the student check the answers.
- If the student had success with the Practice Activities, assign the Concluding Activities. Afterwards help the student check answers.

Extra Practice

Computer Alternative

1. Do Lessons 2 and 6 of the "Decimal" disk from the package *Computer Drill and Instruction: Mathematics, Level D* (*SRA*). If you need help or have an error, remember to hold down the SHIFT key and press the ? key.

Print Alternative

2. Express each of these fractions as a decimal number.

   a. $\frac{3}{10}$

   b. $\frac{2}{5}$

Suggested Answers

1. Computer checked.

2. a. $\frac{3}{10} = 0.3$

   b. $\frac{2}{5} = \frac{4}{10} = 0.4$

c. $\frac{7}{8}$

c. $\frac{7}{8} = \frac{875}{1000} = 0.875$

d. $\frac{3}{7}$

d. $\frac{3}{7} = 0.\dot{4}2857\dot{1}$

3. Express as a fraction in lowest terms.

a. 0.2

3. a. $0.2 = \frac{2}{10} = \frac{1}{5}$

b. 0.25

b. $0.25 = \frac{25}{100} = \frac{1}{4}$

c. 0.85

c. $0.85 = \frac{85}{100} = \frac{17}{20}$

d. 1.7

d. $1.7 = 1\frac{7}{10}$

Guiding the Student

- Have the student do the Concluding Activities.
- Help the student check the answers and correct any errors.

Concluding Activities

Cut out the squares of the Fraction Puzzle at the end of the booklet. Fit them together so that the edges touch the same number. [1]

Suggested Answers

$\frac{2}{3}$ $\frac{1}{4}$	$\frac{4}{6}$ $\frac{0}{2}$ $1\frac{2}{3}$	0 $\frac{1}{6}$ $\frac{1}{2}$	$\frac{2}{12}$ $\frac{3}{5}$
$\frac{2}{8}$ $\frac{4}{5}$ $\frac{5}{6}$	$\frac{5}{3}$ $\frac{8}{10}$ $\frac{3}{3}$ $\frac{6}{3}$	$\frac{2}{4}$ 1 $\frac{4}{12}$ $\frac{1}{7}$	$\frac{6}{10}$ $\frac{1}{3}$ $\frac{3}{8}$
$\frac{10}{12}$ 0.2 0.7	2 $\frac{2}{10}$ $\frac{1}{8}$ $\frac{3}{2}$	$\frac{2}{14}$ $\frac{2}{16}$ $\frac{5}{8}$ $\frac{3}{4}$	$\frac{6}{16}$ $\frac{10}{16}$ $\frac{2}{6}$
$\frac{7}{10}$ $\frac{3}{7}$	$1\frac{1}{2}$ $\frac{6}{14}$ 0.3	$\frac{6}{8}$ $\frac{3}{10}$ $\frac{7}{14}$	$\frac{1}{3}$ $\frac{1}{2}$

[1] *Ideas from the Arithmetic Teacher,* page 49.

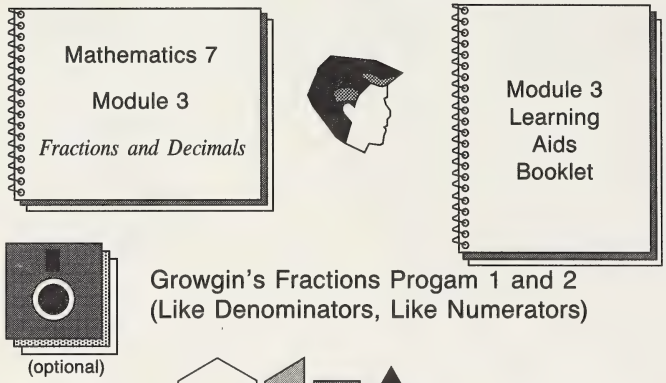
COMPARING AND ORDERING FRACTIONS

What Lies Ahead

In this section the student will learn to compare and order fractions.

Gathering Materials

The student will need these items.



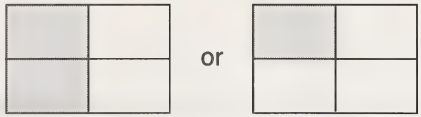
Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 6 of the Module Booklet.
- Have the student read "Working Together," do the Learning Aids Activities, Exercise D in the Learning Aids Booklet, and check the answers.
- Next have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check the answers and correct any errors.

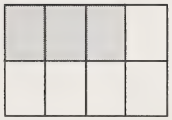
Practice Activities

In each of the following compare the pair of fractions.

1. Which is more?

a.  or

$\frac{2}{4}$ $\frac{1}{4}$

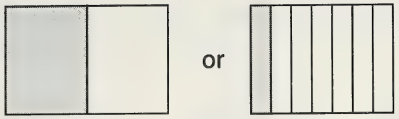
b.  or 

$\frac{3}{8}$ $\frac{1}{8}$

Suggested Answers

1. a. $\frac{2}{4} > \frac{1}{4}$

b. $\frac{3}{8} > \frac{1}{8}$

c.  or

$\frac{1}{2}$ $\frac{1}{8}$

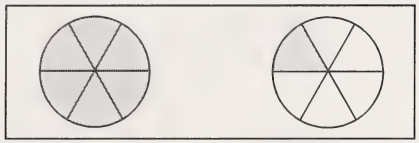
c. $\frac{1}{2} > \frac{1}{8}$

d.  or 

$\frac{3}{6}$ $\frac{3}{4}$

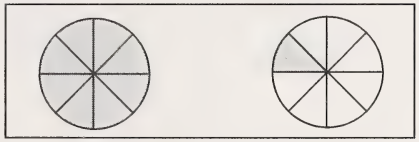
d. $\frac{3}{4} > \frac{3}{6}$

e.



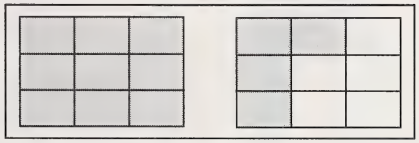
$\frac{7}{6}$

or



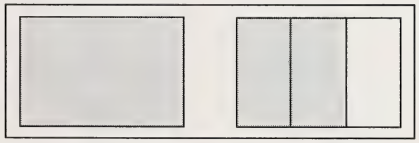
$\frac{9}{8}$

f.



$\frac{13}{9}$

or



$1\frac{2}{3}$

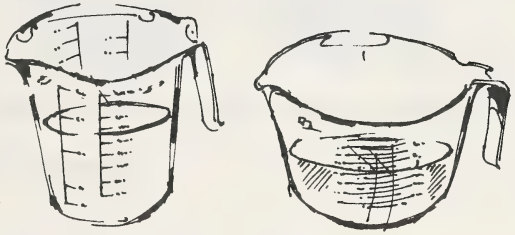
e. $\frac{7}{6} > \frac{9}{8}$

f. $1\frac{2}{3} > \frac{13}{9}$

2. Three pies of the same size are cut differently. Each pie has some pieces missing.

Which pie has the most left?

3. In the following photograph both pitchers hold 1L. The taller pitcher is $\frac{1}{2}$ full. The shorter pitcher is $\frac{3}{5}$ full.

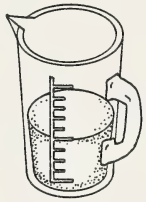


Which pitcher contains more?

2. First pie has $\frac{1}{4}$ left.
Second pie has $\frac{3}{6}$ left.
Third pie has $\frac{3}{8}$ left.

It is easy to see from the diagram that the second pie has the most left.

3. It is difficult to tell from the diagram which contains more. So express fractions with a common denominator.



$\frac{1}{2} = \frac{5}{10}$

$\frac{3}{5} = \frac{6}{10}$

$\frac{6}{10} > \frac{5}{10}$

The shorter pitcher contains more.

Guiding the Student

- If the student had difficulty with the Practice Activities, assign the Extra Practice. If the student had success with the Practice Activities, assign the Concluding Activities.
- Afterwards help the student check the answers and correct any errors.

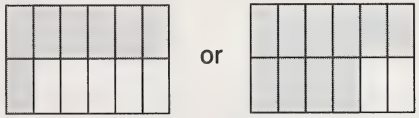
Extra Practice

Computer Alternative

1. Do Programs 1 and 2 (Like Denominators, Like Numerators) on the *Growgin's Fractions* disk.

Print Alternative

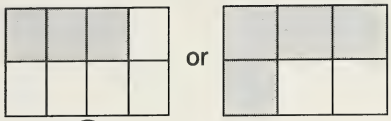
2. Circle the smaller of the fractions in each pair.

a.  or

$\frac{7}{12}$ $\frac{10}{12}$

Suggested Answers

1. Computer checked.

b.  or

$\frac{3}{8}$ $\frac{4}{6}$

c.  or 

$\frac{2}{10}$ $\frac{2}{6}$

Guiding the Student

- Have the student do the Concluding Activities.
- Afterwards help the student check the answers and correct any errors.

Concluding Activities

1. Which is more?

   a. $\frac{1}{3}$ or $\frac{1}{2}$

   b. $\frac{5}{6}$ or $\frac{1}{6}$

   c. $\frac{1}{2}$ or $\frac{3}{4}$

   d. $\frac{3}{5}$ or $\frac{7}{10}$

   e. 0.9 or $\frac{1}{2}$

   f. 3.2 or $3\frac{1}{5}$

Suggested Answers

1. a. $\frac{1}{3} = \frac{2}{6}$, $\frac{1}{2} = \frac{3}{6}$ and $\frac{3}{6} > \frac{2}{6}$. So $\frac{1}{2} > \frac{1}{3}$.

   b. $\frac{5}{6} > \frac{1}{6}$

   c. $\frac{1}{2} = \frac{2}{4}$ and $\frac{3}{4} > \frac{2}{4}$. So $\frac{3}{4} > \frac{1}{2}$.

   d. $\frac{3}{5} = \frac{6}{10}$ and $\frac{7}{10} > \frac{6}{10}$. So $\frac{7}{10} > \frac{3}{5}$.

   e. $0.9 = \frac{9}{10}$, $\frac{1}{2} = \frac{5}{10}$ and $\frac{9}{10} > \frac{5}{10}$. So $0.9 > \frac{1}{2}$.

   f. $3.2 = 3\frac{2}{10}$, $3\frac{1}{5} = 3\frac{2}{10}$ and $3\frac{2}{10} = 3\frac{2}{10}$.

   So $3.2 = 3\frac{1}{5}$.

2. Arrange these fractions and mixed numbers from least to greatest.

   a. $\frac{1}{2}, \frac{2}{3}, \frac{1}{4}, \frac{5}{8}$

   b. $\frac{1}{2}, 1\frac{3}{4}, \frac{7}{8}, \frac{7}{10}$

Computer Alternative

3. Do "Fraction Duet" on Disk B of *MAC 6.* Read the instructions in the folder with the disk before using the program.

2. a. $\frac{1}{4}, \frac{1}{2}, \frac{5}{8}, \frac{2}{3}$

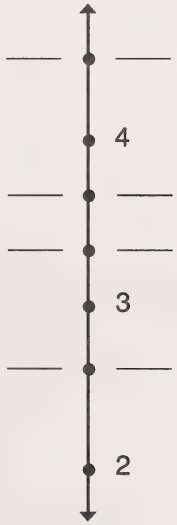
   b. $\frac{1}{2}, \frac{7}{10}, \frac{7}{8}, 1\frac{3}{4}$

3. Computer checked.

Print Alternative

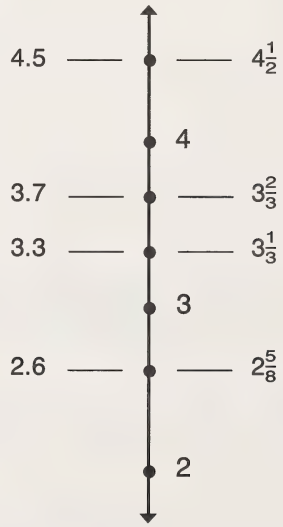
4. Estimate the points on the number lines. Decimals are written on the left of the number lines. Fractions are on the right of the number lines.

a.

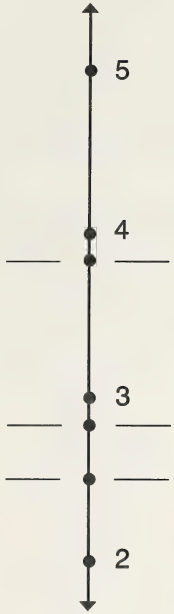


Students are expected to estimate so exact answers are not expected. Estimates will vary but should be fairly close to the following.

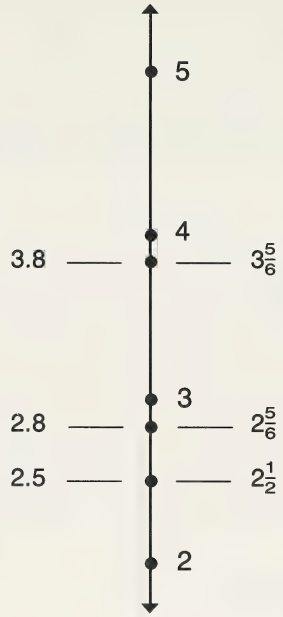
4. a.



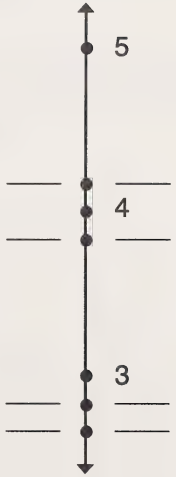
b.



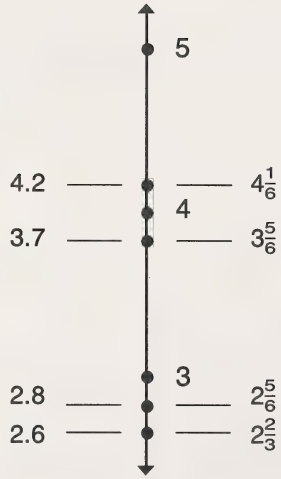
b.



c.

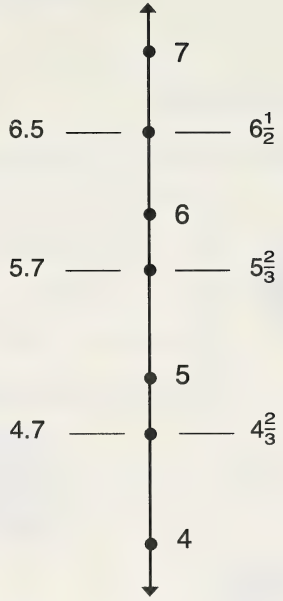


c.



d.

d.



ADDING FRACTIONS CONCRETELY

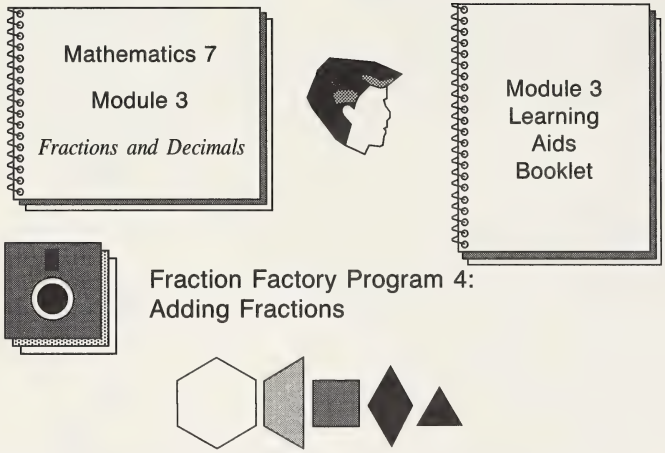
What Lies Ahead

In this section the student will learn these skills.

- using learning aids to add fractions with common and different denominators
- writing sums of fractions in simplest form

Gathering Materials

The student will need these items.



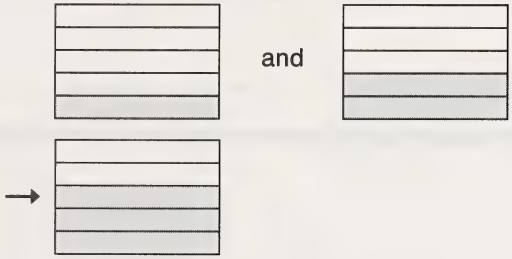
Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 7 of the Module Booklet.
- Have the student read "Working Together," do the Learning Aids Activities, Exercise E in the Learning Aids Booklet, and check the answers.
- Next have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check the answers and correct any errors.

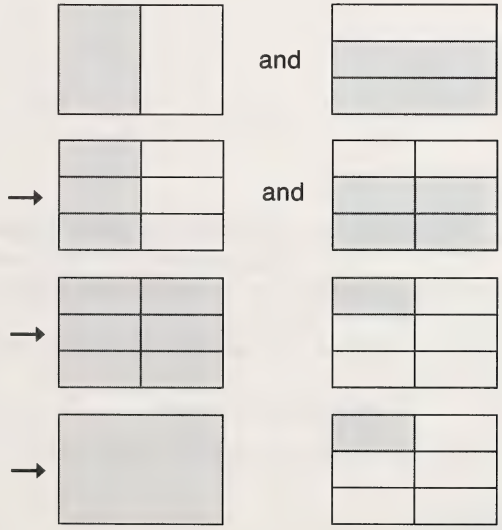
Practice Activities

1. Write a number sentence to describe the following.

a.



b.



Suggested Answers

1. a. $\frac{1}{5} + \frac{2}{5}$

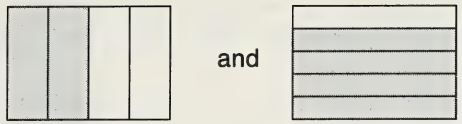
$= \frac{3}{5}$

b. $\frac{1}{2} + \frac{2}{3}$

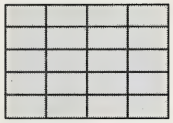
$= \frac{3}{6} + \frac{4}{6}$

$= \frac{7}{6}$

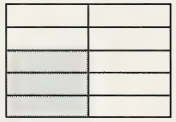
$= 1\frac{1}{6}$

c.  and

→  and 

→  

→  

→  

c. $\frac{2}{4} + \frac{4}{5}$

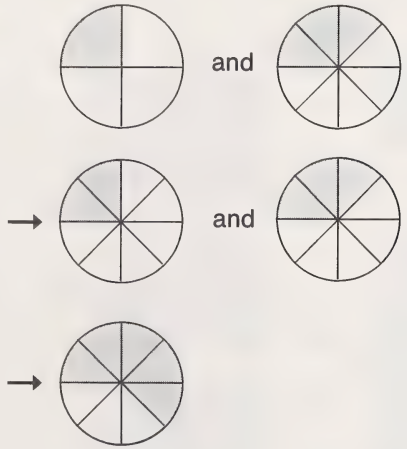
$= \frac{10}{20} + \frac{16}{20}$

$= \frac{26}{20}$

$= 1\frac{6}{20}$

$= 1\frac{3}{10}$

2. Ruth made two pizzas for her family. She cut one pizza into fourths and the other pizza into eighths. Some of the pieces of each pizza were eaten. Write a number sentence to describe how many pieces remained.



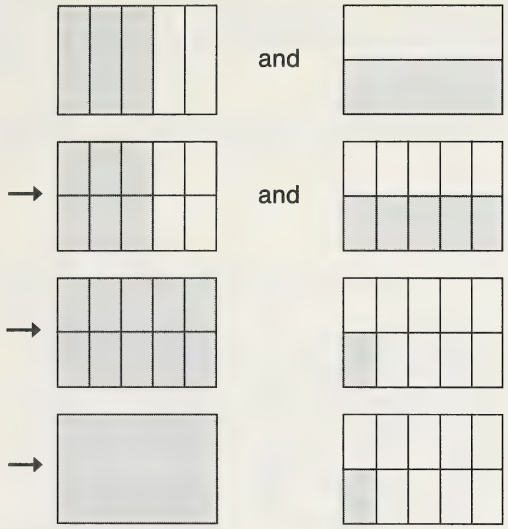
2. $\frac{1}{4} + \frac{3}{8}$

$= \frac{2}{8} + \frac{3}{8}$

$= \frac{5}{8}$

3. Complete the following diagrams and write a number sentence to show each of the following.

a.



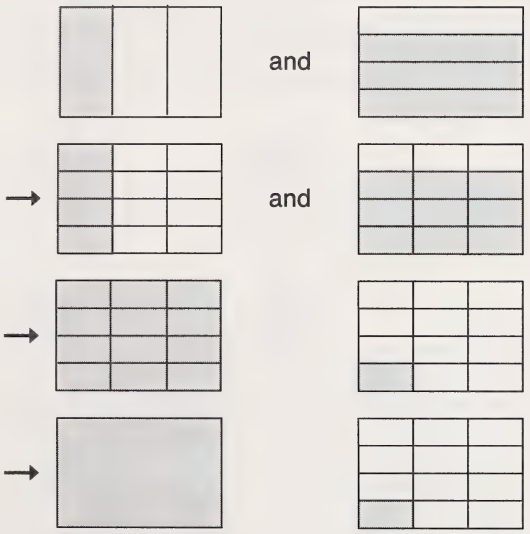
3. a. $\frac{3}{5} + \frac{1}{2}$

$= \frac{6}{10} + \frac{5}{10}$

$= \frac{11}{10}$

$= 1\frac{1}{10}$

b.



b. $\frac{1}{3} + \frac{3}{4}$

$= \frac{4}{12} + \frac{9}{12}$

$= \frac{13}{12}$

$= 1\frac{1}{12}$

Use pattern blocks, or diagrams to solve the following.

4. Carol wallpapered $\frac{1}{5}$ of the livingroom walls. Mike painted as much of the walls as Carol wallpapered, plus he painted another $\frac{2}{5}$ of the walls.

   a. What fraction of the walls did Mike paint?

   b. What fraction of the walls was wallpapered and painted?

In these questions students should be working at concrete and pictorial levels and then writing number sentences.

4. Students will probably use a diagram here as students have not worked with fifths using pattern blocks.

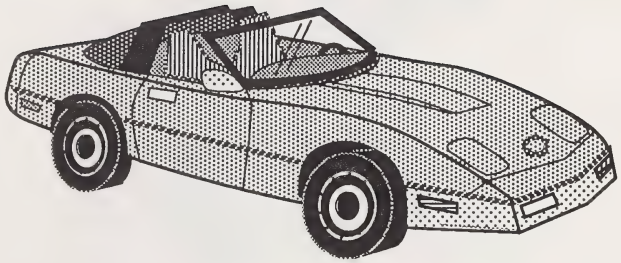
   a. $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$

   Mike painted $\frac{3}{5}$ of the livingroom walls.

   b. $\frac{1}{5} + \frac{3}{5} = \frac{4}{5}$

   $\frac{4}{5}$ of the entire livingroom was painted.

5. The gas tank in Ahmud's car is $\frac{1}{4}$ full. He adds $\frac{1}{2}$ of a tank of gas. How much gas does he have now?



5. Students will probably use pattern blocks here.

$$\frac{1}{4} + \frac{1}{2}$$

$$= \frac{1}{4} + \frac{2}{4}$$

$$= \frac{3}{4}$$

Ahmud now has $\frac{3}{4}$ of a tank of gas.

Guiding the Student

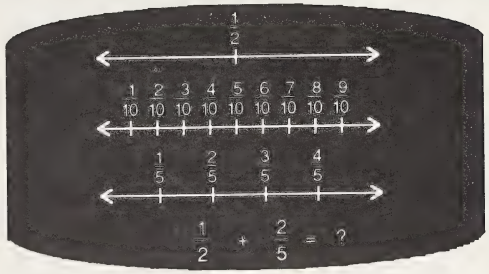
- If the student had difficulty with the Practice Activities, assign the Extra Practice. If the student had success with the Practice Activities, assign the Concluding Activities.
- Afterwards help the student check the answers and correct any errors.

Extra Practice

Do either Question 1 or 2, and then do Questions 3-5.

Computer Alternative

1. If you can use the computer software that comes with the module, do Program 4 (Adding Fractions) on the *Fraction Factory* disk. To select this program press the space bar when this picture appears on the screen.



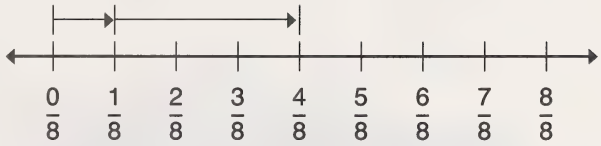
Suggested Answers

1. Computer checked.

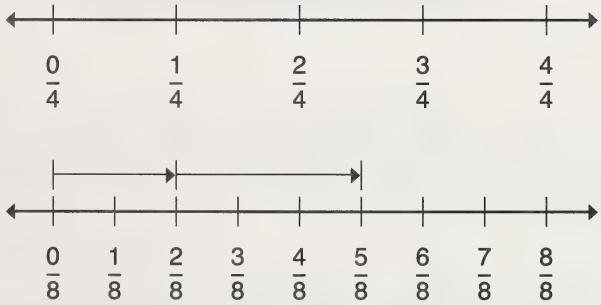
Print Alternative

2. Use number lines to add the following.

a. $\frac{1}{8} + \frac{3}{8}$



b. $\frac{1}{4} + \frac{3}{8}$



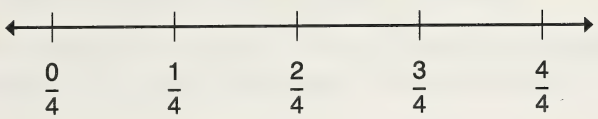
2. a. $\frac{1}{8} + \frac{3}{8} = \frac{4}{8}$ or $\frac{1}{2}$

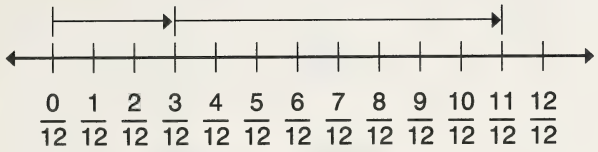
b. $\frac{1}{4} + \frac{3}{8}$

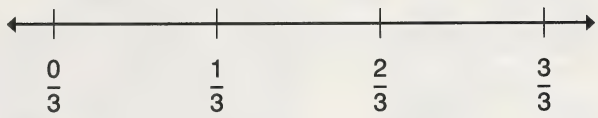
$= \frac{2}{8} + \frac{3}{8}$

$= \frac{5}{8}$

c. $\frac{1}{4} + \frac{2}{3}$







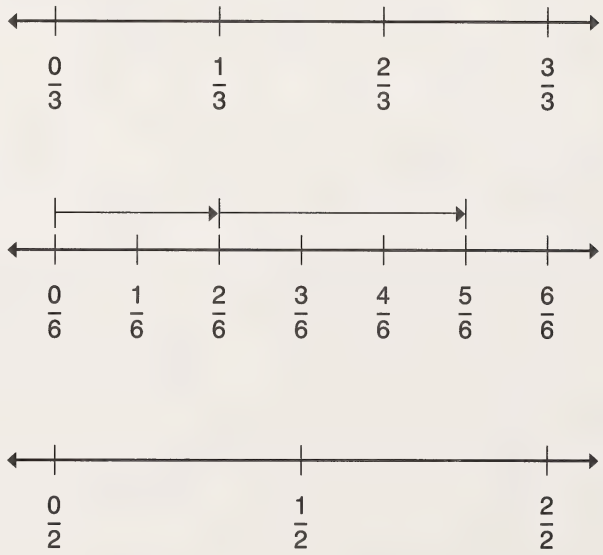
c. $\frac{1}{4} + \frac{2}{3}$

$= \frac{3}{12} + \frac{8}{12}$

$= \frac{11}{12}$

3. Mary's collie ate $\frac{1}{3}$ of a can of dog food. Her St. Bernard ate $\frac{1}{2}$ of a can of dog food. How much dog food did the two pets eat altogether?

3. Students can use their own number lines to solve this problem.



$$\frac{1}{3} + \frac{1}{2} = \frac{2}{6} + \frac{3}{6} = \frac{5}{6}$$

Mary's two dogs ate $\frac{5}{6}$ of a can of dog food altogether.

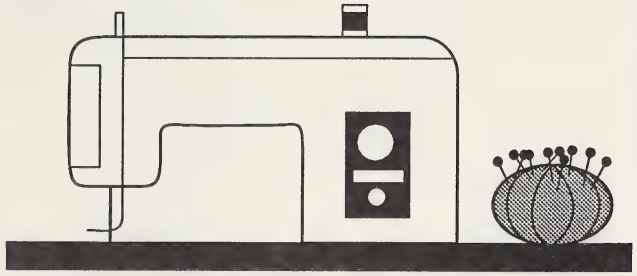
Guiding the Student

- Have the student do the Concluding Activities.
- Help the student check the answers and correct any errors.

Concluding Activities

Use pattern blocks or diagrams to solve the following.

1. Denzil sewed by hand for $1\frac{1}{4}$ hours. Then he sewed by machine for $2\frac{1}{4}$ hours. How long did he sew altogether.



Suggested Answers

In these questions students should be working at the concrete and pictorial levels and then writing number sentences.

1. $1\frac{1}{4} + 2\frac{1}{4}$

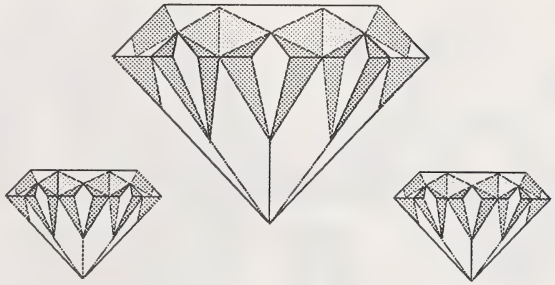
$= \frac{5}{4} + \frac{9}{4}$

$= \frac{14}{4}$

$= 3\frac{1}{2}$

Denzil sewed for $3\frac{1}{2}$ hours altogether.

2. Minal has a broach with three diamonds. One diamond is $1\frac{1}{2}$ carats. The other two diamonds are each $\frac{3}{4}$ carats. What is the total weight of the diamonds?



2. $1\frac{1}{2} + \frac{3}{4}$

$= 1\frac{2}{4} + \frac{3}{4}$

$= \frac{6}{4} + \frac{3}{4}$

$= \frac{9}{4}$

$= 1\frac{1}{4}$

The total weight of the diamonds is $1\frac{1}{4}$ carats.

SUBTRACTING FRACTIONS CONCRETELY

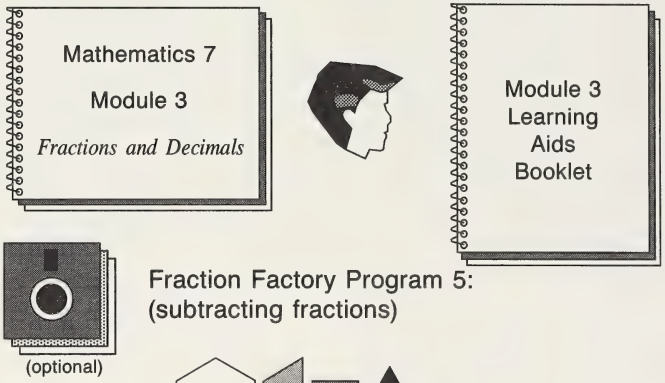
What Lies Ahead

The student will learn these skills.

- using learning aids to subtract fractions with common and different denominators
- expressing the differences of fractions in simplest form

Gathering Materials

The student will need these items.



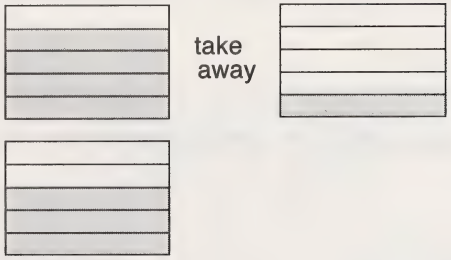
Guiding the Student

- Have the student turn to Section 8 of the Module Booklet and read the "What Lies Ahead" box.
- Next have the student read "Working Together," do the Learning Aids Activities, Exercise F in the Learning Aids Booklet, and check the answers.
- Then have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check the answers and correct any errors.

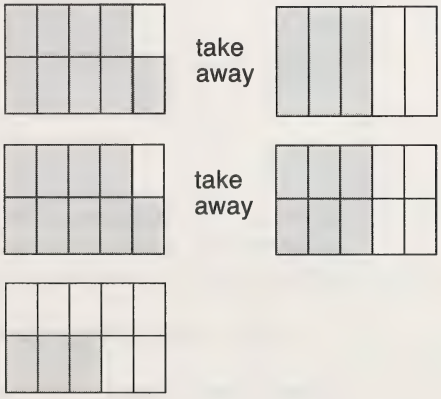
Practice Activities

1. Write number sentences for the following.

a.



b.



Suggested Answers

1. a. $\frac{4}{5} - \frac{1}{5}$

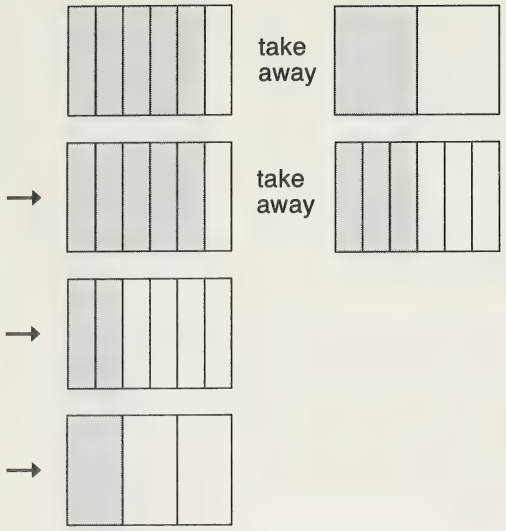
$= \frac{3}{5}$

b. $\frac{9}{10} - \frac{3}{5}$

$= \frac{9}{10} - \frac{6}{10}$

$= \frac{3}{10}$

c.



c. $\frac{5}{6} - \frac{1}{2}$

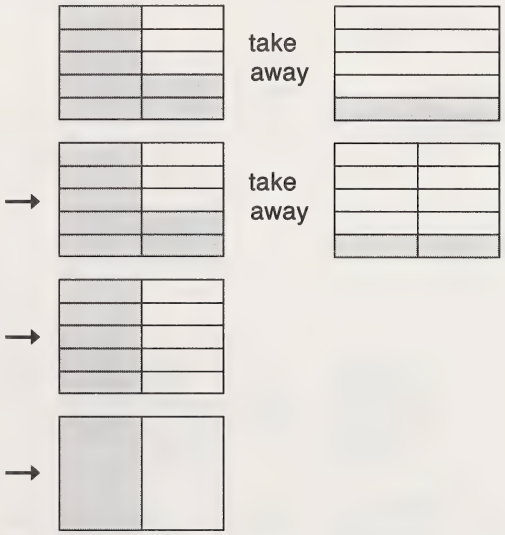
$= \frac{5}{6} - \frac{3}{6}$

$= \frac{2}{6}$

$= \frac{1}{3}$

2. Complete the diagrams and write number sentences to show the following.

a.



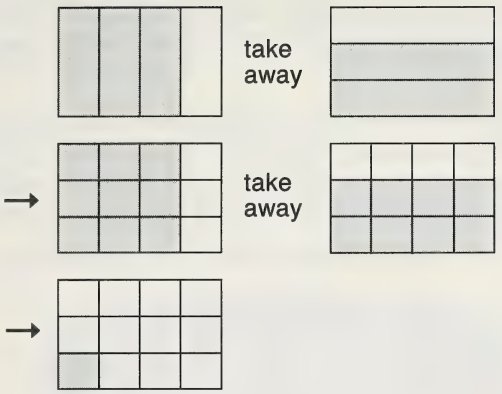
2. a. $\frac{7}{10} - \frac{1}{5}$

$= \frac{7}{10} - \frac{2}{10}$

$= \frac{5}{10}$

$= \frac{1}{2}$

b.



b. $\frac{3}{4} - \frac{2}{3}$

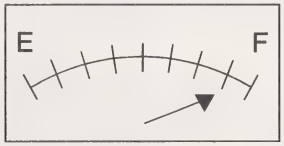
$= \frac{9}{12} - \frac{8}{12}$

$= \frac{1}{12}$

Use pattern blocks, diagrams or number lines to solve the following.

In these questions students should be working at the concrete and pictorial levels and then writing number sentences.

3. The gas tank in Mrs. Cox's car was $\frac{7}{8}$ full.



She used $\frac{1}{4}$ tank to drive from her home in Barrhead to Edmonton.

a. What fraction of a tank of gas is left?

3. a. $\frac{7}{8} - \frac{1}{4} = \frac{7}{8} - \frac{2}{8} = \frac{5}{8}$

The fraction of the tank of gas left was $\frac{5}{8}$.

b. Will she need more gas to return home?

b. She will have enough gas to return home since $\frac{5}{8}$ of a tank is greater than the $\frac{1}{4}$ of a tank needed to get home.

Guiding the Student

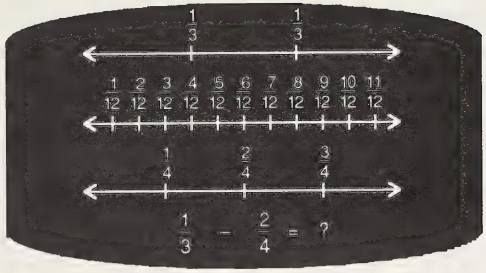
- If the student had difficulty with the Practice Activities, assign the Extra Practice. If the student had success with the Practice Activities, assign the Concluding Activities.
- Afterwards help the student check the answers and correct any errors.

Extra Practice

Do either Question 1 or 2, and then do Question 3.

Computer Alternative

1. If you can use the computer software that comes with this module, do Program 5 (Subtracting Fractions) of the Fractions Factory disk. To select this program, press the space bar when this picture comes on the screen.



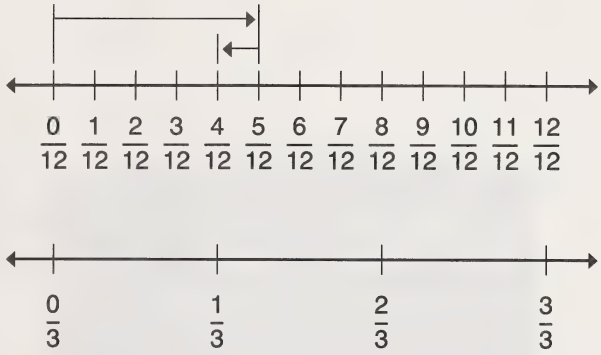
Suggested Answers

1. Computer checked.

Print Alternative

2. Use number lines to subtract the following.

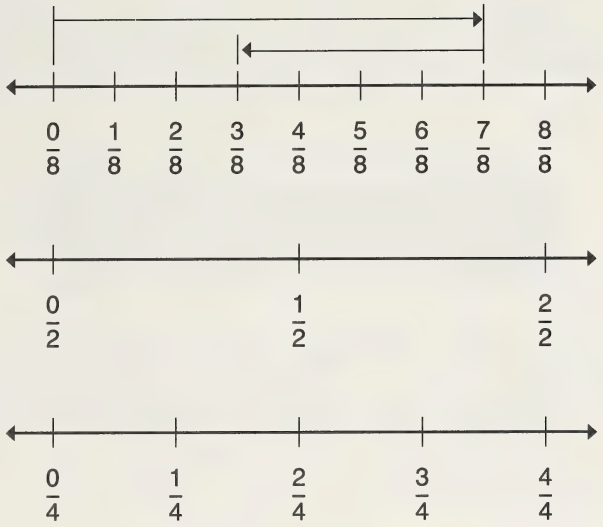
a. $\frac{5}{12} - \frac{1}{12}$



2. a. $\frac{5}{12} - \frac{1}{12} = \frac{4}{12}$

$= \frac{1}{3}$

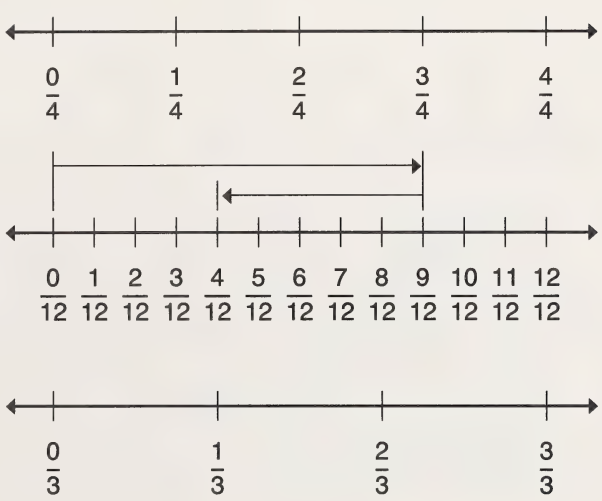
b. $\frac{7}{8} - \frac{1}{2}$



b. $\frac{7}{8} - \frac{1}{2} = \frac{7}{8} - \frac{4}{8}$

$= \frac{3}{8}$

c. $\frac{3}{4} - \frac{1}{3}$

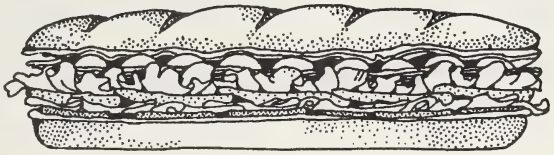


c. $\frac{3}{4} - \frac{1}{3} = \frac{9}{12} - \frac{4}{12}$

$= \frac{5}{12}$

Use pattern blocks or diagrams to solve the following.

3. Bill ate $\frac{2}{5}$ of a submarine sandwich. Dennis ate $\frac{1}{3}$ of a submarine sandwich. If the submarine sandwiches were the same size, how much more did Bill eat?



4. Yvonne and Ruth are both reading the same book. Yvonne has read $\frac{3}{4}$ of the book. Ruth has read $\frac{5}{6}$ of the book. How much more has Ruth read than Yvonne?

In these questions students should be working at the concrete and pictorial levels and then writing number sentences.

3. $\frac{2}{5} - \frac{1}{3}$

$= \frac{6}{15} - \frac{5}{15}$

$= \frac{1}{15}$

Bill ate $\frac{1}{15}$ more of the submarine than Dennis.

4. $\frac{5}{6} - \frac{3}{4}$

$= \frac{10}{12} - \frac{9}{12}$

$= \frac{1}{12}$

Ruth has read $\frac{1}{12}$ more of the book than Yvonne.

Guiding the Student

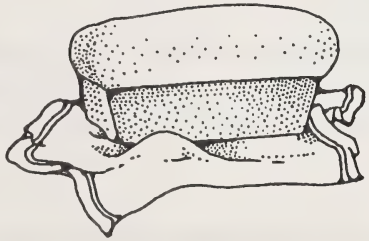
- Have the student do the Concluding Activities.
- Help the student check the answers and correct any errors.

Concluding Activities

Use pattern blocks or diagrams to solve the following.

1. Sing-li had 4 decks to paint. If she painted $1\frac{1}{2}$ decks on Saturday, how many decks are left to paint?

2. Jason had $3\frac{3}{4}$ loaves of bread. He uses $2\frac{1}{4}$ loaves for sandwiches. How much bread was left?



Suggested Answers

In these questions students should be working at the concrete and pictorial levels and then writing number sentences.

1. $4 - 1\frac{1}{2}$

$= \frac{8}{2} - \frac{3}{2}$

$= \frac{5}{2}$

$= 2\frac{1}{2}$

Sing-li has $2\frac{1}{2}$ decks left to paint.

2. $3\frac{3}{4} - 2\frac{1}{4}$

$= \frac{15}{4} - \frac{9}{4}$

$= \frac{6}{4}$

$= 1\frac{1}{2}$

There was $1\frac{1}{2}$ loaves of bread left.

MULTIPLYING FRACTIONS CONCRETELY

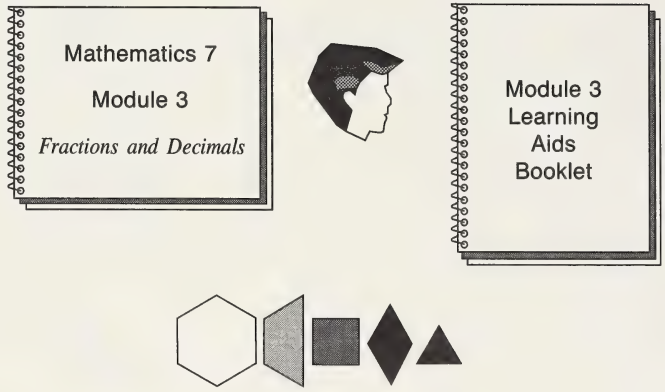
What Lies Ahead

The student will learn these skills.

- using learning aids to multiply fractions and whole numbers
- expressing a product of fractions in simplest form

Gathering Materials

The student will need these items.



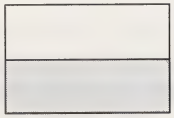
Guiding the Student

- Have the student turn to Section 9 in the Module Booklet and read the ''What Lies Ahead'' box.
- The have the student read ''Working Together,'' do the Learning Aids Activities, Exercise G in the Learning Aids Booklet, and check the answers.
- Have the student return to the Module Booklet, read ''Working Together,'' and do the Practice Activities.
- Afterwards help the student check the answers and correct any errors.

Practice Activities

1. Write a number sentence for each of the following diagrams.

a. one-third of

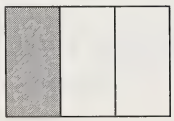


→

b. one-half of

→

→



Suggested Answers

1. a. $\frac{1}{3} \times \frac{1}{2}$

$= \frac{1}{6}$

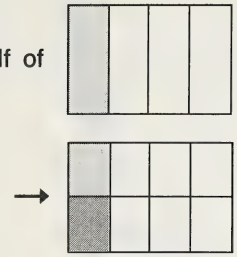
b. $\frac{1}{2} \times \frac{2}{3}$

$= \frac{2}{6}$

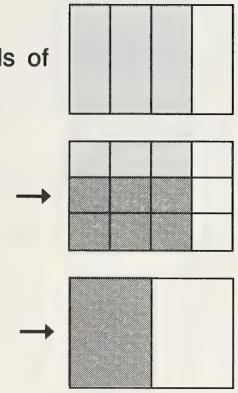
$= \frac{1}{3}$

2. Complete the diagrams and write the number sentences.

a. one-half of



b. two-thirds of



2. a. $\frac{1}{2} \times \frac{1}{4}$

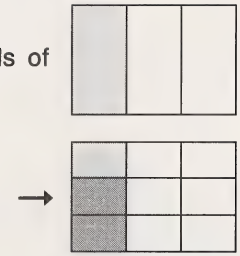
$= \frac{1}{8}$

b. $\frac{2}{3} \times \frac{3}{4}$

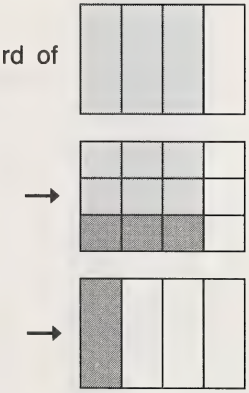
$= \frac{6}{12}$

$= \frac{1}{2}$

c. two-thirds of



d. one-third of



c. $\frac{2}{3} \times \frac{1}{3}$

$= \frac{2}{9}$

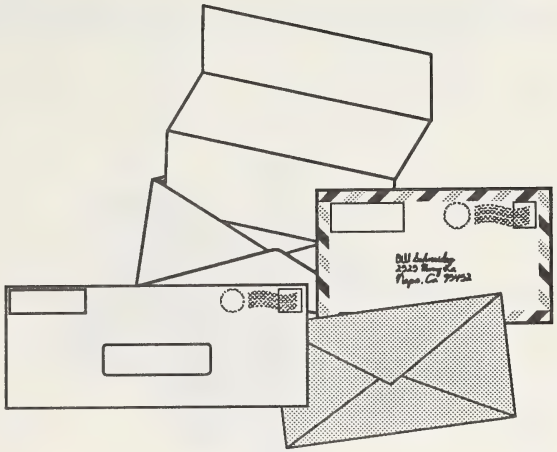
b. $\frac{1}{3} \times \frac{3}{4}$

$= \frac{3}{12}$

$= \frac{1}{4}$

Use pattern blocks or diagrams to solve the following.

3. Joshua works on his stamp collection for $\frac{1}{2}$ h each day. If he only worked for $\frac{1}{3}$ of the time today how much time did he spend on stamp collecting today?



In this question students should be working at the concrete and pictorial levels and then writing number sentences.

3. $\frac{1}{3} \times \frac{1}{2}$

$= \frac{1}{6}$

Joshua spent $\frac{1}{6}$ h on stamp collecting today.

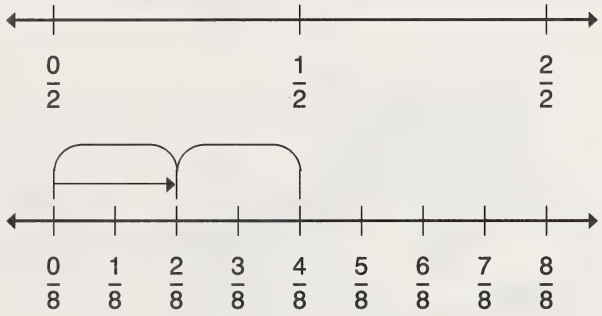
Guiding the Student

- If the student had difficulty with the Practice Activities, assign the Extra Practice. If the student had success with the Practice Activities, assign the Concluding Activities.
- Afterwards help the student check the answers and correct any errors.

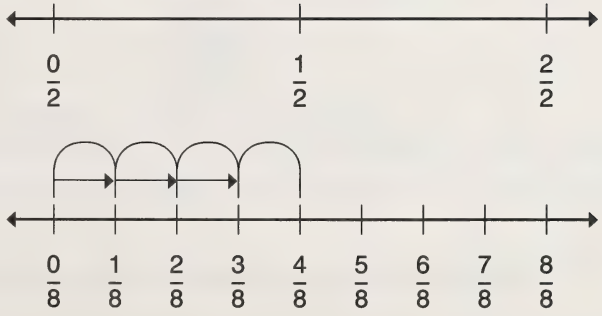
Extra Practice

Use number lines to solve the following.

1. a. $\frac{1}{4} \times \frac{1}{2}$



b. $\frac{3}{4} \times \frac{1}{2}$



Suggested Answers

$\frac{1}{4} \times \frac{1}{2}$ means 1 of 4 parts of $\frac{1}{2}$.

1. a. $\frac{1}{4} \times \frac{1}{2}$

$= \frac{1}{8}$

$\frac{3}{4} \times \frac{1}{2}$ means 3 of 4 parts of $\frac{1}{2}$.

b. $\frac{3}{4} \times \frac{1}{2}$

$= \frac{3}{8}$

Use pattern blocks, diagrams or numberlines to solve the following.

2. A shelf in a store can hold $\frac{3}{4}$ of a large carton of soup cans. How much will $\frac{1}{2}$ a shelf hold?

3. A construction crew can finish $\frac{1}{3}$ of a house in a week. How much can it finish in $\frac{3}{5}$ of a week?

In these questions students should be working at the concrete and pictorial levels and then writing number sentences.

2. $\frac{3}{4} \times \frac{1}{2}$

$= \frac{3}{8}$

$\frac{3}{4} \times \frac{1}{2}$ means 3 of 4 parts of $\frac{1}{2}$.

Half a shelf will hold $\frac{3}{8}$ of a carton of soup cans.

3. $\frac{1}{3} \times \frac{3}{5}$

$= \frac{3}{15}$

$= \frac{1}{5}$

$\frac{1}{3} \times \frac{3}{5}$ means 1 of 3 parts of $\frac{3}{5}$.

A construction crew can finish $\frac{1}{5}$ of a house in $\frac{3}{5}$ of a week.

Guiding the Student

- Have the student do the Concluding Activities.
- Afterwards help the student check the answers and correct any errors.

Concluding Activities

Use pattern blocks or diagrams or to solve the following.

1. A shirt costs $24. It is on sale for $\frac{1}{3}$ off.

   a. How much will you save by paying the sale price?

   b. How much will you pay for the shirt?

2. Ruth's mom takes $\frac{3}{4}$ minutes to read a page. How long will it take her to read 12 pages?

Suggested Answers

In these questions students should be working at the concrete and pictorial levels and then writing number sentences.

$\frac{1}{3} \times 24$ means 1 of 3 parts of 24.

1. a. $\frac{1}{3} \times 24 = 8$

   You will save $8.

   b. $24 - 8 = 16$

   You will pay $16 for the shirt.

$\frac{3}{4} \times 12$ means 3 of 4 parts of 12.

2. $\frac{3}{4} \times 12 = 9$

   It will take her 9 minutes to read 12 pages.

3. A recipe calls for $2\frac{1}{2}$ carrots (grated). If you were to make $\frac{1}{2}$ the recipe, how many carrots would you need?

$\frac{1}{2} \times 2\frac{1}{2}$ means 1 of 2 parts of $2\frac{1}{2}$.

3. $\frac{1}{2} \times 2\frac{1}{2} = 1\frac{1}{4}$

You would need $1\frac{1}{4}$ carrots (grated).

DIVIDING FRACTIONS CONCRETELY

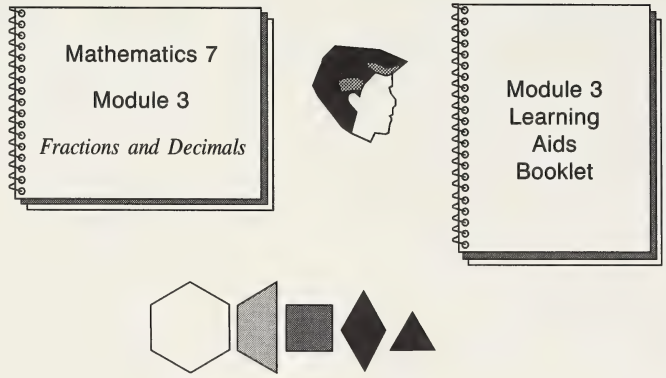
What Lies Ahead

The student will learn these skills.

- using learning aids to divide fractions
- expressing quotients of fractions in simplest form

Gathering Materials

The student will need these items.



Guiding the Student

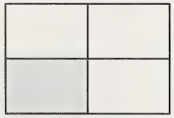
- Have the student turn to Section 10 of the Module Booklet and read the "What Lies Ahead" box.
- Have the student read "Working together," do the Learning Aids Activities, Exercise H in the Learning Aids Booklet, and check the answers.
- Have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check the answers and correct any errors.

Practice Activities

1. Write number sentences to describe each of these diagrams.

a. How many  are there

in  ?

→ How many  are there

in  ?

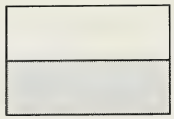
→ 

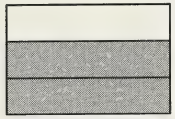
Suggested Answers

1. a. $\frac{1}{2} \div \frac{1}{4}$

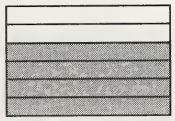
$= \frac{2}{4} \div \frac{1}{4}$

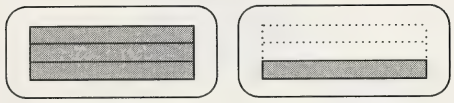
$= 2$

b. How many  are there

in  ?

→ How many  are there

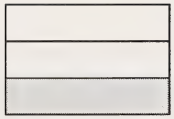
in  ?

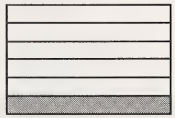
→ 

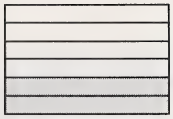
b. $\frac{2}{3} \div \frac{1}{2}$

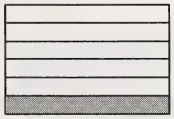
$= \frac{4}{6} \div \frac{3}{6}$

$= 1\frac{1}{3}$

c. How many  are there

in  ?

→ How many  are there

in  ?

→ 

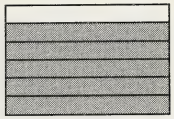
c. $\frac{1}{6} \div \frac{1}{3}$

$= \frac{1}{6} \div \frac{2}{6}$

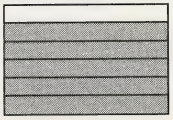
$= \frac{1}{2}$

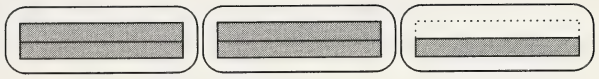
2. Complete each of the following diagrams and write the number sentences for each diagram.

a. How many  are there

in  ?

→ How many  are there

in  ?

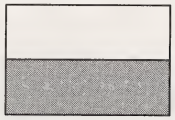
→ 

2. a. $\frac{5}{6} \div \frac{1}{3}$

$= \frac{5}{6} \div \frac{2}{6}$

$= 2\frac{1}{2}$

b. How many  are there

in  ?

→ How many  are there

in  ?

→ 

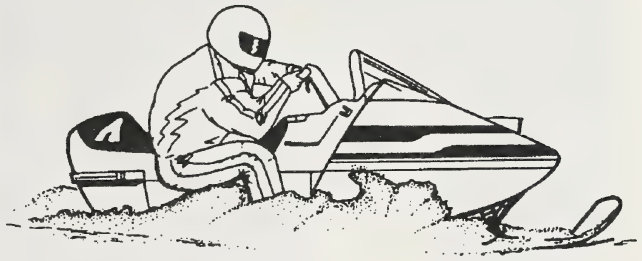
b. $\frac{1}{2} \div \frac{1}{3}$

$= \frac{3}{6} \div \frac{2}{6}$

$= 1\frac{1}{2}$

Use pattern blocks or diagrams to solve the following.

3. Jerrit used $\frac{1}{2}$ a tank of gas driving his snowmobile. If the snowmobile uses $\frac{1}{6}$ of a tank in one hour, how many hours did he drive it?



In this question students should be working at the concrete and pictorial levels and then writing number sentences.

3. $\frac{1}{2} \div \frac{1}{6}$ means in $\frac{1}{2}$ there are how many groups of $\frac{1}{6}$?

$$\frac{1}{2} \div \frac{1}{6}$$

$$= \frac{3}{6} \div \frac{1}{6}$$

$$= 3$$

Jerrit drove his snowmobile for 6 hours.

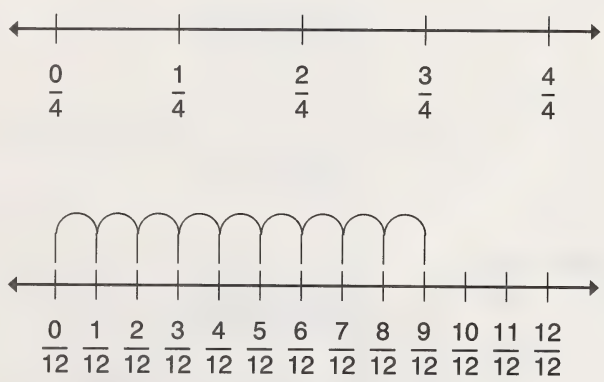
Guiding the Student

- If the student had difficulty with the Practice Activities, assign the Extra Practice. If the student had success with the Practice Activities, assign the Concluding Activities.
- Afterwards help the student check the answers and correct any errors.

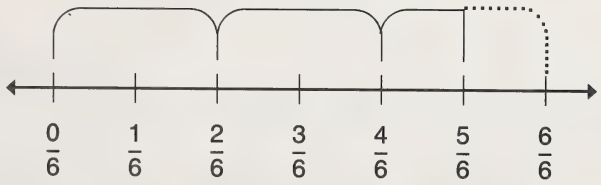
Extra Practice

1. Use number lines to solve the following.

a. $\frac{3}{4} \div \frac{1}{12}$



b. $\frac{5}{6} \div \frac{1}{3}$



Suggested Answers

1. a. $\frac{3}{4} \div \frac{1}{12}$ means in $\frac{3}{4}$ there are how many groups of $\frac{1}{12}$?

$$\frac{3}{4} \div \frac{1}{12}$$

$$= \frac{9}{12} \div \frac{1}{12}$$

$$= 9$$

b. $\frac{5}{6} \div \frac{1}{3}$ means in $\frac{5}{6}$ there are how many groups of $\frac{1}{3}$?

$$\frac{5}{6} \div \frac{1}{3}$$

$$= \frac{5}{6} \div \frac{2}{6}$$

$$= 2\frac{1}{2}$$

Use pattern blocks, diagrams or number lines to solve the following.

2. Ruth attends exercise classes. If an exercise class lasts $\frac{1}{2}$ hour, how many exercise classes can Ruth attend in $\frac{3}{4}$ hour?

In this question students should be working at the concrete and pictorial levels and then writing number sentences.

2. $\frac{3}{4} \div \frac{1}{2}$ means in $\frac{3}{4}$ there are how many groups of $\frac{1}{2}$?

$$\frac{3}{4} \div \frac{1}{2}$$

$$= \frac{3}{4} \div \frac{2}{4}$$

$$= 1\frac{1}{2}$$

Ruth can attend $1\frac{1}{2}$ exercise classes in $\frac{3}{4}$ hour.

Guiding the Student

- Have the student do the Concluding Activities.
- Afterwards help the student check the answers and correct any errors.

Concluding Activities

1. Lois has 4 balls of wool. If a pair of baby booties use $\frac{1}{2}$ of a ball of wool, how many pairs of baby booties can she make?

2. Jamie gives private figure skating lessons. Each lesson takes $\frac{1}{2}$ of an hour. In 4 hours how many lessons can Jamie give?

Suggest Answers

In these questions students should be working at the concrete and pictorial levels and then writing number sentences.

1. $4 \div \frac{1}{2}$

$= \frac{8}{2} \div \frac{1}{2}$

$= 8$

Lois can make 8 pairs of booties out of 4 balls of wool.

2. $4 \div \frac{1}{2}$

$= \frac{8}{2} \div \frac{1}{2}$

$= 8$

Jamie can give 8 lessons in 4 hours.

3. Joe Nepoose can remove the snow from a driveway in $\frac{3}{4}$ h. How many driveways can he clear in 6 hours?

4. A shelf in a grocery store will hold 3 cartons of cereal boxes. How many shelves will be needed to display $1\frac{1}{2}$ cartons of cereal boxes?

3. $6 \div \frac{3}{4}$

$= \frac{24}{4} \div \frac{3}{4}$

$= 8$

Joe Nepoose can clear 8 driveways in 6 hours.

4. $3 \div 1\frac{1}{2}$

$= 3 \div \frac{3}{2}$

$= \frac{6}{2} \div \frac{3}{2}$

$= 2$

Two shelves will be needed to display $1\frac{1}{2}$ cartons of cereal boxes.

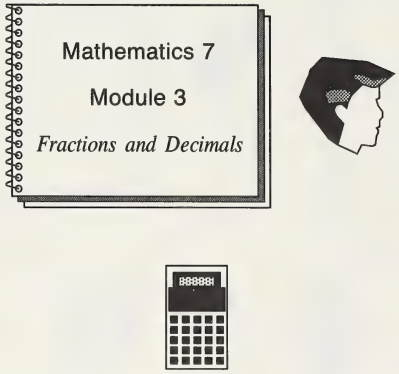
SUMMARY

What Lies Ahead

In this section the student will review the skills taught in Sections 1 to 10.

Gathering Materials

The student will need these items.



Guiding the Student

- Have the student turn to the Summary in the Module Booklet and read the "What Lies Ahead" box and "Working Together."
- Have the student review the skills that have been taught in Sections 1 to 10.
- Then have the student turn to Section 1 and review the pretest and correct any errors he or she may have made at the time.

GETTING SET

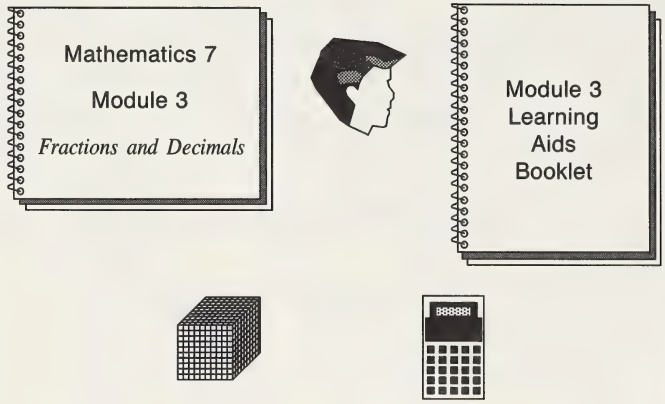
What Lies Ahead

This section tests these skills.

- interpreting place values of digits in a decimal number
- reading a decimal number
- writing a decimal number in standard form and in expanded form
- comparing and ordering decimal numbers
- rounding decimal numbers
- adding subtracting, multiplying and dividing decimal numbers

Gathering Materials

The student will need these items.



Guiding the Student

- Have the student turn to Section 12 in the Module Booklet and read the "What Lies Ahead" box and "Working Together."
- Have the student do the pretest.
- Help the student check the answers. It may not be necessary for the student to correct errors. See the last page of this section for further directions.

Pretest

1. Use base 10 blocks to represent

   a. 1.1

   b. 1.11

   c. 1.111

   d. 1.011

   e. 1.01

   f. 1.001

   g. 1.101

Suggested Answers

	ones	tenths	hundredths	thousandths
1. a.				
b.				
c.				.
d.				.
e.				
f.				.
g				.

2. Express the following numbers in standard form.

   a. $(4 \times 10) + (7 \times 1) + (2 \times 0.1) + (3 \times 0.01)$

   b. $(8 \times 100) + (3 \times 1) + (2 \times 0.01) + (7 \times 0.001)$

3. Express the following numbers in expanded form.

   a. 3.17

   b. 9.029

   c. 0.097

2. a. 47.23

   b. 803.027

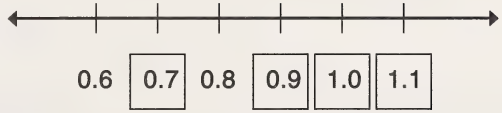
3. a. $(3 \times 1) + (1 \times 0.1) + (7 \times 0.01)$

   b. $(9 \times 1) + (2 \times 0.01) + (9 \times 0.001)$

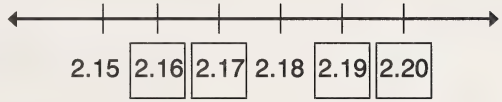
   c. $(9 \times 0.01) + (7 \times 0.001)$

4. Complete the number line.

a.



b.



5. Below are the gold metal results in the 400 metre hurdles in the Olympics. Order the results from greatest to least.

1968	Dave Hemery, Great Britain	48.1
1972	John Aku-Bua, Uganda	47.82
1976	Edwin Moses, U.S.A.	47.64
1980	Volder Beck, E. Germany	48.70
1984	Edwin Moses, U.S.A.	47.75

This list is written from greatest to least.

5. 48.70
   48.1
   47.82
   47.75
   47.64

6. Round each of the following to the nearest hundredth.

   a. $5.246

   b. $0.895

   c. $27.512

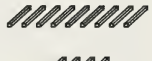
7. Use base 10 blocks to model each of the following.

   a. 1.09 + 0.543

   b. 0.854 – 0.78

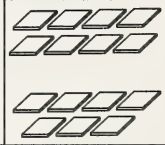
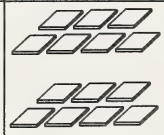
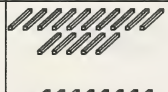
6. a. $5.25
   b. $0.90
   c. $27.51

7. a.

	ones	tenths	hundredths	thousandths
and				...
→				...
or				...

1.09 + 0.543 = 1.633

b.

	ones	tenths	hundredths	thousandths
take away				....
→ take away				....
→				....

0.854 – 0.78 = 0.074

8. Estimate each sum or difference.

   a. $\begin{array}{r} 4.85 \\ +2.27 \\ \hline \end{array}$

   b. $\begin{array}{r} 0.89 \\ -0.873 \\ \hline \end{array}$

   c. $6.28 + 20.7 + 3.93$

   d. $10 - 5.76$

9. Compute the exact sum or difference in Question 8. Do not use a calculator.

8. Answers may vary.

using rounding

a. $\begin{array}{r} 5 \\ +2 \\ \hline 7 \end{array}$

b. $\begin{array}{r} 0.9 \\ -0.9 \\ \hline 0 \end{array}$

c. $\begin{array}{r} 6 \\ 21 \\ 4 \\ \hline 31 \end{array}$

d. $\begin{array}{r} 10.0 \\ 6.0 \\ \hline 4.0 \end{array}$

using front-end digits

a. $\begin{array}{r} 4 \\ +2 \\ \hline 6 \end{array}$

b. $\begin{array}{r} 0.8 \\ -0.8 \\ \hline 0 \end{array}$

c. $\begin{array}{r} 6 \\ 20 \\ 3 \\ \hline 29 \end{array}$

d. $\begin{array}{r} 10 \\ -5 \\ \hline 5 \end{array}$

9. a. $\begin{array}{r} 4.85 \\ +2.27 \\ \hline 7.12 \end{array}$

b. $\begin{array}{r} 0.890 \\ -0.873 \\ \hline 0.017 \end{array}$

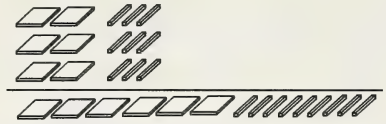
c. $\begin{array}{r} 6.28 \\ 20.7 \\ +3.93 \\ \hline 30.91 \end{array}$

d. $\begin{array}{r} 10.00 \\ -5.76 \\ \hline 4.24 \end{array}$

10. Use base 10 blocks to model the following.

a. 0.23 × 3

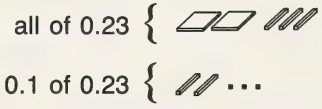
a. 0.23 × 3 means 3 groups of 0.23.



0.23 × 3 = 0.69

b. 0.23 × 0.1

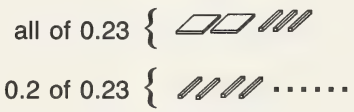
b. 0.23 × 0.1 means 0.1 of 0.23 or 1 of 10 equal parts of 0.23.



0.23 × 0.1 = 0.0.23

c. 0.23 × 0.2

c. 0.23 × 0.2 means 0.2 of 0.23 or 2 of 10 equal parts of 0.23.



0.23 × 0.2 = 0.046

11. Estimate the following.

a.
$$\begin{array}{r} 59 \\ \times 1.2 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 0.72 \\ \times 0.8 \\ \hline \end{array}$$

c.
$$\begin{array}{r} 35.8 \\ \times 0.167 \\ \hline \end{array}$$

12. Compute the exact product for each problem in Question 11. Do not use a calculator.

11. Answers may vary.

using rounding

a.
$$\begin{array}{r} 60 \\ \times 1 \\ \hline 60 \end{array}$$

b.
$$\begin{array}{r} 1 \\ \times 1 \\ \hline 1 \end{array}$$

c.
$$\begin{array}{r} 36 \\ \times 0 \\ \hline 0 \end{array}$$

using front-end digits

a.
$$\begin{array}{r} 50 \\ \times 1 \\ \hline 50 \end{array}$$

b.
$$\begin{array}{r} 0.7 \\ \times 0.8 \\ \hline 0.56 \end{array}$$

c.
$$\begin{array}{r} 30 \\ \times 0.1 \\ \hline 3.0 \end{array}$$

12. a.
$$\begin{array}{r} 59 \\ \times 1.2 \\ \hline 118 \\ 59 \\ \hline 70.8 \end{array}$$

b.
$$\begin{array}{r} 0.72 \\ \times 0.8 \\ \hline 0.576 \end{array}$$

c.
$$\begin{array}{r} 35.8 \\ 0.167 \\ \hline 2506 \\ 2148 \\ 358 \\ \hline 5.9786 \end{array}$$

13. Use base 10 blocks to model the following.

a. $0.8 \div 4$

b. $0.8 \div 0.4$

14. Estimate each of the following.

a. $83\overline{)697.2}$

b. $73\overline{)37.23}$

c. $5.8\overline{)3.596}$

d. $12.1\overline{)41.14}$

13. a. $0.8 \div 4$ can mean in 0.8 there are 4 groups of how many.

Each group has  so $0.8 \div 4 = 0.2$.

b. $0.8 \div 0.4$ can mean in 0.8 there are how many groups of 0.4.

There are 2 groups. So $0.8 \div 4 = 2$.

14. Answers may vary.

using rounding	using front-end digits	using compatible digits
a. $80\overline{)700}$ $\quad 8$	a. $80\overline{)600.0}$ $\quad 7$	a. $80\overline{)640}$ $\quad 8$
b. $70\overline{)40.0}$ $\quad 0.5$	b. $70\overline{)30.00}$ $\quad 0.4$	b. $70\overline{)35}$ $\quad 0.5$
c. $6\overline{)4.0}$ $\quad 0.6$	c. $5.0\overline{)3.000}$ $\quad 0.6$	c. $6\overline{)3.6}$ $\quad 0.6$
d. $12\overline{)40}$ $\quad 3$	d. $10.1\overline{)40.00}$ $\quad 4$	d. $12\overline{)36}$ $\quad 3$

15. Compute the exact quotient for each problem in Question 14. Do not use a calculator.

16. Use a calculator to find the remainder for each of these division problems.

a. 39 876 ÷ 5

b. 12 345 ÷ 6

15. a.
$$\begin{array}{r} 8.4 \\ 83\overline{)\,697.2} \\ 664 \\ \hline 332 \\ 332 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 0.51 \\ 73\overline{)\,37.23} \\ 36\,5 \\ \hline 73 \\ 73 \\ \hline \end{array}$$

c.
$$\begin{array}{r} 0.62 \\ 5.8\overline{)\,3.5\,96} \\ 3\,48 \\ \hline 116 \\ 116 \\ \hline \end{array}$$

d.
$$\begin{array}{r} 3.4 \\ 12.1\overline{)\,41.1\,4} \\ 36\,3 \\ \hline 4\,84 \\ 4\,84 \\ \hline \end{array}$$

16. a.

Key Press	Display
3 9 8 7 6 ÷ 5 =	7975.2
− 7 9 7 5 =	0.2
× 5 =	1

b.

Key Press	Display
1 2 3 4 5 ÷ 6 =	2057.5
− 2 0 5 7 5 =	0.5
× 6 =	3

17. 5000 staples have a mass of 160.2 g. What is the mass of one staple rounded to the nearest hundredth?

Calculators may be used in Questions 17 to 20.

17. $160.2 \div 5000 = 0.03204$
$\doteq 0.03$
The mass of one staple is 0.03 g.

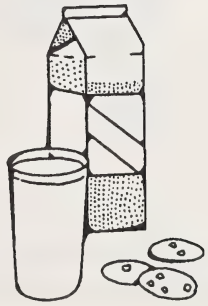
18. Chopped meat is sold at 3.95 per kg. What is the cost of a 2.85 kg package of chopped meat? Round your answer to the nearest cent.

18. $\$3.95 \times 2.85 = 11.2575$
$\doteq 11.26$
The cost of the chopped meat is \$11.26.

19. The tree on Mr. McCarthy's lawn was 1.45 m tall four years ago. Since then it has grown 0.78 m taller. How tall is it now?

19. 1.45 + 0.78 = 2.23
Mr. McCarthy's tree is 2.23 m tall now.

20. Mrs. Beaulieu used 0.25 L of milk from a new carton of milk. If the milk carton held 1 L of milk, how much is left?



20. 1.5 − 0.25 = 1.25
There is 1.25 L of milk left.

Guiding the Student

After checking the answers, compare the student's results with the following chart. The chart lists the skills covered in the Pretest and the section in which the skill will be taught.

Question	Skill	Section
1, 2, 3, 4	recognizing place value of decimal numbers	13
5	comparing and ordering decimal numbers	14
6	rounding decimal numbers	15
7, 8, 9, 19, 20	adding and subtracting decimal numbers	16
10, 11, 12, 16, 18	multiplying decimal numbers	17
13, 14, 15, 16, 17	dividing decimal numbers	18, 19

Help the student decide what to do next. It is recommended that students do most of the sections which correspond to the questions with which they experienced difficulties and only the concluding activities in the sections which correspond to the questions with which they experienced success.

PLACE VALUE OF DECIMAL NUMBERS

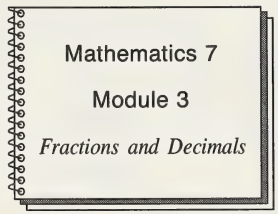
What Lies Ahead

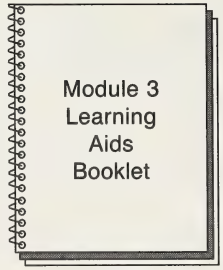
The student will learn these skills.

- interpreting the place values of digits in a decimal to read a decimal number
- reading a decimal number
- writing a decimal number in standard form and expanded form

Gathering Materials

The student will need these items





SRA Computer Drill and Instruction; Mathematics, Level D "Decimals" Lesson 5

Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 13 of the Module Booklet.
- Have the student read "Working Together," do the Learning Aids Activities, Exercise I in the Learning Aids Booklet, and check the answers.
- Next have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards, help the student check the answers and correct any errors.

Practice Activities

Computer Alternative

1. If you have a computer, do Lesson 5 of the Decimals disk from the package *SRA Computer Drill and Instruction: Mathematics, Level D.* Read the instructions in the folder before using the program. Remember if you need help hold down the SHIFT key and press the ? key.

Print Alternative

2. Express each of the following in standard form.

   a. four and seven-tenths

   b. ten and eighty-one hundredths

   c. fifty and twelve thousandths

   d. $(3 \times 100) + (8 \times 10) + (4 \times 1) + (2 \times 0.1) + (7 \times 0.01) + (9 \times 0.00)$

Suggested Answers

1. Computer checked.

2. a. 4.7

   b. 10.81

   c. 50.012

   d. 384.279

e. $(4 \times 10) + (1 \times 0.1) + (6 \times 0.01)$

f. $(5 \times 100) + (9 \times 10) + (3 \times 1) + (8 \times 0.01)$

g. $(6 \times 0.01) + (3 \times 0.1) + (7 \times 0.001)$

3. Express the following in expanded form.

a. 6.72

b. 50.09

c. 0.002

e. 40.16

f. 593.08

g. 0.367

3. a. $(6 \times 1) + (7 \times 0.1) + (2 \times 0.01)$

b. $(5 \times 10) + (9 \times 0.01)$

c. (2×0.001)

Guiding the Student

- Have the student do the Concluding Activities.
- Help the student check the answers.

Concluding Activities

1. Insert a decimal point to make each of these a reasonable statement.

   a. Barry caught a fish 825 cm long.

   b. The temperature was 183°C in the house.

   c. In 1987 the population of Canada was about 257 million people.

   d. The number of kilometres travelled, as shown on a car odometer, is 878653.

Suggested Answers

1. a. Barry caught a fish 8.25 cm long.

   b. The temperature was 18.3°C in the house.

   c. In 1987 the population of Canada was about 25.7 million people.

   d. The number of kilometres travelled, as shown on a car odometer, is 787 865.3.

2. The display on most calculators can hold only 7 decimal places.

   a. What happens when you enter a number with more than 7 decimal places such as 0.000 000 01?

   b. What is displayed when you enter 0.000 000 1 ÷ 5?

2. Answers will vary.

- If you have a regular calculator you may have this display.

   a. 

The calculator won't accept the extra decimal places.

   b. 

Note: (b) is an incorrect answer. These calculators can not work with very small numbers.

- If you have a scientific calculator you may have this display.

   a. 

Scientific calculators can hold 9 decimal places. If you try to enter more than 9 decimal places, the calculator won't accept the extra decimal places.

   b. 

This display means 2×10^{-08}. You will learn more about this in grade 8.

COMPARING AND ORDERING DECIMAL NUMBERS

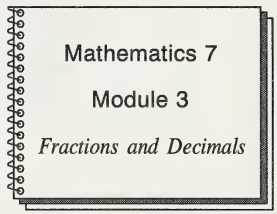
What Lies Ahead

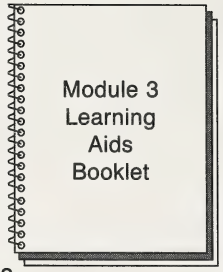
The student will learn these skills.

- comparing decimal numbers
- ordering decimal numbers

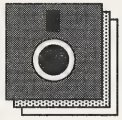
Gathering Materials

The student will need these items.





Solve It: Ordering Decimals



SRA Computer Drill and Instruction; Mathematics, Level D "Decimals" Lessons 3, 8, 9; Disk A of MAC 6 Program 1 (Decimal Hunt); Disk A of MAC 7 Program 1B (The Last Move)

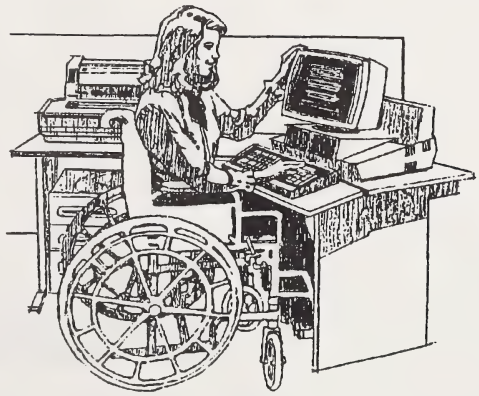
Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 14 of the Module Booklet.
- Have the student read "Working Together," do the Learning Aids Activities, Exercise J in the Learning Aids Booklet, and check answers.
- Have the student return to the Module Booklet, read the "Working Together," and do the Practice Activities.
- Afterwards, help the student check the answers and correct any errors.

Practice Activities

Computer Alternative

1. Do Lesson 3, 8 and 9 of the Decimals disk from the package *SRA Computer Instruction and Drill, Mathematics D.* Read the instructions in the folder with the disk before using the program. Remember if you need help or have an error, hold down the SHIFT key and press the ? key.



Suggested Answers

1. Computer checked.

Print Alternative

2. Arrange the batting average of these Toronto Blue Jay players in order from lowest to highest.

Barfield, Jesse	0.273
Bell, George	0.287
Fernandez, Tony	0.295
Garcia, Damaso	0.288
Mulliniks, Rance	0.280
Upshaw, Willie	0.268
Whitt, Ernie	0.248

2. This lists the batting averages from lowest to highest.

0.248
0.268
0.273
0.280
0.287
0.288
0.295

3. Use $<$, $>$, or $=$ to make each of the following a true statement.

   a. 8.15 ◯ 8.051

   b. 1.03 ◯ 1.2

   c. 0.7 ◯ 0.007

   d. 0.006 ◯ 0.01

   e. 53.21 ◯ 532.1

   f. 1.380 ◯ 1.38

   g. 4.69 ◯ 4.96

   h. 0.020 ◯ 0.2

3. a. $8.15 > 8.051$

   b. $1.03 < 1.2$

   c. $0.7 > 0.007$

   d. $0.006 < 0.01$

   e. $53.21 < 532.1$

   f. $1.380 = 1.38$

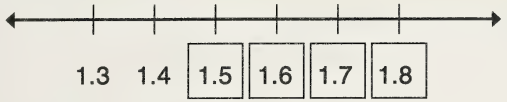
   g. $4.69 < 4.96$

   h. $0.020 < 0.2$

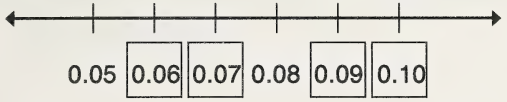
Concluding Activities

Complete each of these number lines.

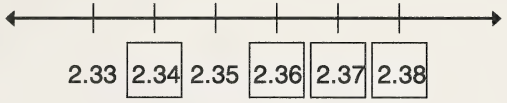
1.



2.



3.



Suggested Answers

ROUNDING DECIMALS

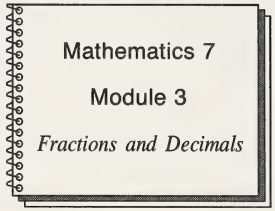
What Lies Ahead

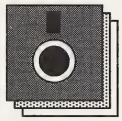
The student will learn these skills.

- rounding decimal numbers to the nearest one, to the nearest tenth, to the nearest hundredth and to the nearest thousandth

Gathering Materials

The student will need these items.





SRA Computer Drill and Instruction; Mathematics, Level D "Decimals" Lesson 11

Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 15 of the Module Booklet.
- Next have the student read "Working Together," and do the Practice Activities.
- Afterwards, help the student check the answers and correct any errors.

Practice Activities

Computer Alternative

1. Do Lesson 11 of the Decimals disk from the package *SRA Computer Instruction and Drill: Mathematics, Level D.* Read the instructions in the folder with the disk before using the program. Remember if you need help or have an error hold down the SHIFT key and press the ? key.

Print Alternative

2. Round each amount given to the nearest dollar.

   a. $12.49

   b. $19.77

   c. $24.98

   d. $5.25

Suggested Answers

1. Computer checked.

2. a. $12

   b. $20

   c. $25

   d. $5

3. Round each mass given to the nearest tenth of a kilogram.

   a. 0.275 kg

   b. 1.62 kg

   c. 0.503 kg

   d. 1.29 kg

3. a. 0.3 kg

   b. 1.6 kg

   c. 0.5 kg

   d. 1.3 kg

4. Round each height given to the nearest metre.

   a. 92.44 m

   b. 190.295 m

   c. 124 554 m

   d. 185.88 m

4. a. 92 m

   b. 190 m

   c. 124 554 m

   d. 186 m

Guiding the Student

- Have the student do the Concluding Activities.
- Help the student check the answers and correct any errors.

Concluding Activities

1. a. Three packages of seeds are on sale for $1.00. If you buy only one package, the store will charge you $0.34. Explain the rounding rule that grocery stores use.

   b. If you buy two packages of seed, how much will the store charge you?

2. If you have only $20 to spend and you are buying items at the grocery store you may round all the numbers **up** to the nearest dollar. By doing this you will be sure that you have enough money. Round the following prices using this rule to see if you have enough money.

   $ 0.99
   3.35
   4.72
   1.15
   5.48
   1.79

Suggested Answers

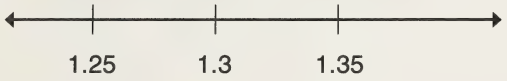
1. a. $1.00 ÷ 3 = $0.333 . . . or $0.$\dot{3}$. Stores always round up to the next cent so the charge here will be $0.34.

   b. $1.00 ÷ 3 = $0.333 . . . and
   $0.333 . . . × 2 = $0.666 . . . or $0.666 . . . or $0.$\dot{6}$
   which when rounded up to the next cent will be $0.67.

2. The items will cost about $20.
   This is a high estimate so you will have enough.

3. 1.3 is said to be precise to the nearest tenth. That is 1.3 represents any number between $1.25, inclusive, and 1.35, exclusive, that is rounded to the nearest tenth.

Hint: Inclusive means including that number. Exclusive means not including that number. In the question 1.25 is included and 1.35 is not included.



a. 1.30 is precise to the nearest hundredth. What range of numbers does 1.30 represent?

b. What range of numbers does 1.300 represent?

c. What range does 7.949 represent?

d. What range does 2.300 represent?

e. What range does 1.00 represent?

3. a. The range of numbers is between 1.295 inclusive and 1.305 exclusive.

b. The range of numbers is between 1.2995 inclusive and 1.3005 exclusive.

c. The range of numbers is between 7.9485 inclusive and 7.9495 exclusive.

d. The range of numbers is between 2.2995 inclusive and 2.3005 exclusive.

e. The range of numbers is between 0.995 inclusive and 1.005 exclusive.

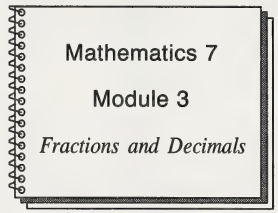
ADDING AND SUBTRACTING DECIMAL NUMBERS

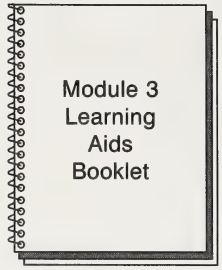
What Lies Ahead

The student will learn to add and subtract decimal numbers.

Gathering Materials

The student will need these items.





SRA Computer Drill and Instruction; Mathematics Level D "Decimals" Lesson 12 Disk A of MAC7 Program 1A ("Decimal Dynamite")

Guiding the Student

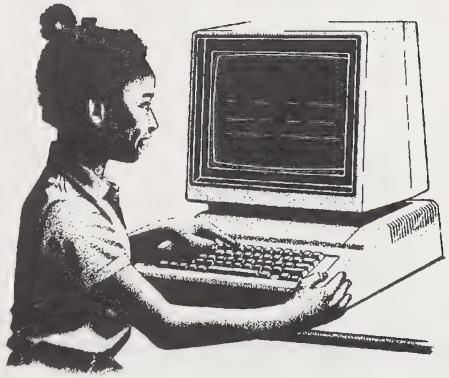
- Have the student read the "What Lies Ahead" box in Section 16 of the Module Booklet.
- Have the student read "Working Together," do the Learning Aids Activities, Exercise K and L in Learning Aids Booklet, and check answers
- Next have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check answers and correct any errors.

Practice Activities

Do Questions 1 or 2 - 3. Then do Questions 4 - 8.

Computer Alternative

1. Do Lesson 12 of the "Decimal" disk from the package *SRA Computer Instruction and Drill, Mathematics, Level D.* Read the instructions in the folder with the disk before using the program. Remember if you need help or have an error hold down the SHIFT key and press the ? key.



Suggested Answers

1. Computer checked.

Print Altnerative

2. Find the sum or the difference for each of the following.

a. $ 3.86
+ 4.94

b. 1.75
+ 1.463

c. 2.68
+ 1.463

d. 13.6
4.99
+ 57.3

e. 53.34
− 17.28

f. 7.15
− 2.05

2. a. $\overset{1}{3}.\overset{1}{8}6$
+ 4.94
8.80 or $8.80

b. $\overset{1}{1}.\overset{1}{7}5$
+ 1.463
3.213

c. $\overset{1}{2}.\overset{1}{6}8$
+ 1.463
4.143

d. $\overset{1}{1}\overset{1}{3}.6$
4.99
+ 57.3
75.89

e. $\overset{4}{\cancel{5}}\overset{2}{\cancel{3}}.34$
− 17.28
36.06

f. 7.15
− 2.05
5.10

3. Find the sum or the difference for each of the following.

a. 0.83 + 0.5 + 7

b. 2.90 + 3.07

c. 0.881 − 0.082

d. 0.293 − 0.05

e. 6.06 + 2.34 + 50

f. 430 − 75.9

g. 0.3 − 0.222

h. 9.64 − 8

3. a.
$$\begin{array}{r} {\scriptstyle 1} \\ 0.83 \\ 0.50 \\ +\,7.00 \\ \hline 8.33 \end{array}$$

b.
$$\begin{array}{r} 2.90 \\ +\,3.07 \\ \hline 5.97 \end{array}$$

c.
$$\begin{array}{r} {\scriptstyle 7\,7_{1}} \\ 0.881 \\ -\,0.082 \\ \hline 0.799 \end{array}$$

d.
$$\begin{array}{r} 0.293 \\ -\,0.05 \\ \hline 0.243 \end{array}$$

e.
$$\begin{array}{r} {\scriptstyle 1} \\ 6.06 \\ 2.34 \\ +\,50.00 \\ \hline 58.40 \end{array}$$

f.
$$\begin{array}{r} {\scriptstyle 3\,1\,2\,9_{1}} \\ 430.0 \\ -\,75.9 \\ \hline 354.1 \end{array}$$

g.
$$\begin{array}{r} {\scriptstyle 2\,9_{1}} \\ 0.300 \\ -\,0.222 \\ \hline 0.078 \end{array}$$

h.
$$\begin{array}{r} 9.64 \\ -\,8.00 \\ \hline 1.64 \end{array}$$

4. Are these sums or differences reasonable? Calculate the ones that are not reasonable.

   a.
   $$\begin{array}{r} 0.999 \\ -\,0.013 \\ \hline 0.986 \end{array}$$

   b.
   $$\begin{array}{r} 10.25 \\ +\,89.96 \\ \hline 90.21 \end{array}$$

   c.
   $$\begin{array}{r} \$\,9.83 \\ +\,7.18 \\ \hline \$\,17.03 \end{array}$$

   d. $2.84 + 2.316 = 2.600$

   e.
   $$\begin{array}{r} 37.41 \\ -\,26.82 \\ \hline 10.59 \end{array}$$

   f. $0.756 + 0.29 = 0.785$

4. Estimates will vary depending on the method used. Here rounding was used.

   a. **Estimate** $1 - 0 = 1$
   Yes, the difference is reasonable.

   b. **Estimate** $10 + 90 = 100$
   No, the sum is not reasonable.

   $$\begin{array}{r} 10.25 \\ 89.96 \\ \hline 100.21 \end{array}$$

   c. **Estimate** $10 + 7 = 17$
   Yes, the sum is reasonable.

   d. **Estimate** $3 + 2 = 5$
   No, the sum is not reasonable.

   $$\begin{array}{r} 2.84 \\ 2.316 \\ \hline 5.156 \end{array}$$

   e. **Estimate** $37 - 27 = 10$
   Yes, the difference is reasonable.

   f. **Estimate** $1 + 0 = 1$
   Yes, the sum is reasonable.

5. Janice wants to buy a skateboard which costs $229.95. She has $74.68 in her bank account now. How much more must she save to have enough money to buy the skateboard?

6. Carlo has a mass of 79.25 kg. He is carrying a pack with a mass of 3.15 kg. What is Carlo's total mass including the pack?

Students may use calculators in Questions 5 to 8.

5. 229.95 − 74.68 = 155.27
   Janice must save $155.27 more before she can buy the skateboard that she wants.

6. 79.25 + 3.15 = 82.4
   The total mass including the pack is 82.4 kg.

7. Nora's family received a telephone bill of $32.37. These are the long distance charges.

Claresholm, AB	$ 2.15
Toronto, ON	$ 6.72
Truro, NS	$10.43
Edmonton, AB	$ 2.77

a. What is the total of the long distance charges?

b. How much are the rental charges?
Hint: Rental Charges and Long Distance Charges = Total Bill

7. a. 2.15 + 6.72 + 10.43 + 2.77 = 22.07
The total of the long distance charge is $22.07.

b. 32.37 – 22.07 = 10.30
The rental charges for the telephone equipment are $10.30.

8. Bobby Rahal, who won the Indianapolis 500 in 1986, drove at an average speed of 274.743 km/h. Al Unser, who won in 1987, drove at an average speed of 260.988 km/h. How much faster did Bobby Rahal drive?

8. 274.743 – 260.988 = 13.755
Bobby Rahal drove 13.755 km/h faster than Al Unser.

Guiding the Student

- Have the student do the Concluding Activities.
- Help the student check the answers and correct any errors.

Concluding Activities

Computer Alternative

1. If you can use the computer disk that comes with this module, do Program 1A "Decimal Dynamite" on Disk A of *MAC 7.*

Print Alternative

2. You are offered a job that pays \$0.01 the first day \$0.02 on the second, \$0.04 the third day, \$0.08 the fourth day, and so on. (Each day your salary is doubled.) How much will you earn by the end of 5 days, 10 days, 20 days. Use your calculator to compute the answer. Would you take the job? Why?

Suggested Answers

1. Computer checked.

2. $0.01 + 0.02 + 0.04 + 0.08 + 0.16 = 0.31$

   At the end of 5 days you would earn \$0.31.

   $0.31 + (0.32 + 0.64 + 1.28 + 2.56 + 5.12) = 10.23$

   At the end of 10 days you would earn \$10.23.

   $1010.23 + (10.24 + 20.48 + 40.96 + 81.92 + 163.84 + 327.68 + 655.36 + 1310.72 + 2621.44 + 5242.88) = 10\,485.75$

   At the end of 20 days you would earn \$10 485.75.

   You should take the job since the pay on the 20th day is over \$10 000. If this pattern continued, you would be a millionaire in no time.

3. Write the digits in the boxes at the right to make the largest possible and the smallest possible answers. Use each digit only once. [1]

	Largest Answer	Smallest Answer
a. 9, 3, 1, 6	$\boxed{9}\boxed{6}.\boxed{7} + \boxed{3}.\boxed{1} = 99.8$	$\boxed{3}\boxed{1}.\boxed{7} + \boxed{6}.\boxed{9} = 38.6$
	or	or
	$\boxed{9}\boxed{3}.\boxed{7} + \boxed{6}.\boxed{1} = 99.8$	$\boxed{3}\boxed{6}.\boxed{7} + \boxed{1}.\boxed{9} = 38.6$
b. 3, 4, 7, 3	$\boxed{6}\boxed{7}.\boxed{4} - \boxed{3}.\boxed{3} = 64.1$	$\boxed{6}\boxed{3}.\boxed{3} - \boxed{7}.\boxed{4} = 55.9$
c. 8, 4, 7, 0	$\boxed{3}.\boxed{4}\boxed{8}\boxed{7} - \boxed{2}.\boxed{0}\boxed{4} = 1.447$	$\boxed{3}.\boxed{4}\boxed{4}\boxed{0} - \boxed{2}.\boxed{8}\boxed{7} = 0.57$

[1] *Arithmetic Teacher*, March, 1987.

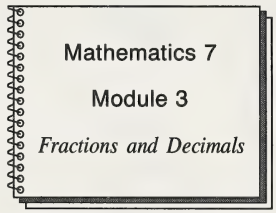
MULTIPLYING DECIMAL NUMBERS

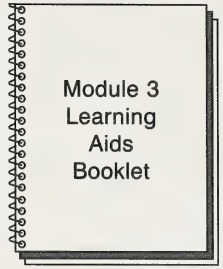
What Lies Ahead

The student will learn to multiply decimal numbers.

Gathering Materials

The student will need these items.





SRA Computer Drill and Instruction; Mathematics Level D "Decimals" Lesson 13-16 Disk B of MAC6 Program 8 "Multi-Maze"

Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 17 of the Module Booklet.
- Have the student read "Working together," do the Learning Aids Activities, Exercise M in Learning Aids Booklet, and check the answers.
- Next have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check answers and correct any errors.

Practice Activities

Computer Alternative

1. Do Lessons 13, 14, 15, 16 of the Decimals disk from the package *SRA Computer Instruction and Drill Mathematics, Level D.* Read the instructions in the folder with the disk before using the program. If you need help or have an error hold down the SHIFT key and press the ? key.

Print Alternative

Do not use a calculator for Questions 2 to 5.

2. Multiply each of the following.

   a. 2×4.32

   b. 0.75×0.6

   c. 5×1.56

   d. 0.94×4.006

Suggested Answers

1. Computer checked.

2. a.
$$\begin{array}{r} 4.32 \\ \times\, 2 \\ \hline 8.64 \end{array}$$

   b.
$$\begin{array}{r} 0.75 \\ \times 0.6 \\ \hline 0.450 \end{array}$$

   c.
$$\begin{array}{r} 1.56 \\ \times\, 5 \\ \hline 7.80 \end{array}$$

   d.
$$\begin{array}{r} 4.006 \\ \times 0.94 \\ \hline 16024 \\ 36054 \\ \hline 3.76564 \end{array}$$

Do not use a calculator for Questions 3 to 5.

3. For each of the following give an estimate and an exact calculated answer. Round the exact product to the nearest tenth.

a. 28.1×0.73

b. 2.58×38.2

c. 80.02×20.3

3.

	Estimate	Exact Product	Nearest Tenth
a.	$28 \times 1 = 28$	$28.1 \times 0.73 = 20.513$	20.5
b.	$3 \times 40 = 120$	$2.58 \times 38.2 = 98.556$	98.6
c.	$80 \times 20 = 1600$	$80.02 \times 20.3 = 1624.406$	1624.4

4. Place the decimal point in the product.

   a. $4.6 \times 1.8 = 828$

   b. $43.5 \times 7.5 = 32625$

   c. $1.8 \times 0.07 = 126$

5. Are the products reasonable? Calculate those products that are not reasonable.

   a.
   $$\begin{array}{r} 3.45 \\ \times 7.4 \\ \hline 255.3 \end{array}$$

   b.
   $$\begin{array}{r} 174 \\ \times 0.95 \\ \hline 16.53 \end{array}$$

   c.
   $$\begin{array}{r} 19.5 \\ \times 0.505 \\ \hline 9.8475 \end{array}$$

4. a. 8.28

   b. 326.25

   c. 0.126

5. Estimates will vary depending on method used. Here rounding was used.

   a. **Estimate** $3 \times 7 = 21$
   No, the product is not reasonable.

   $$\begin{array}{r} 3.45 \\ \times 7.4 \\ \hline 1\,380 \\ 24\,15 \\ \hline 25.530 \end{array}$$

   2 places + 1 place = 3 places

   b. **Estimate** $174 \times 1 = 174$
   No, the product is not reasonable.

   $$\begin{array}{r} 174 \\ \times 0.95 \\ \hline 8\,70 \\ 156\,6 \\ \hline 165.30 \end{array}$$

   2 places; 2 places

   c. **Estimate** $20 \times 0.5 = 10$
   Yes, the product is reasonable.

Use a calculator when solving Questions 6 - 9.

6. Shelah earns $24.50 per hour as a welder. If she works 36.25 hours in one week, how much does she earn?

6. $36.25 \times 24.50 = 888.125$
Shelah earns $888.13 in one week.

7. Jean bought 44 L of regular unleaded gasoline at 38.2 cents per L. How much did it cost? Express your answer in dollars.

WESTFILE INC.

7. $44 \times .382 = 16.808$
The gas cost $16.81.

8. Mr. Wold sold 408.75 tonnes of wheat at $128.35 per tonne. How much did he get paid?

8. 408.75 × 128.35 = 52463.0625
Mr. Wold received $52 463.06 from the sale of his wheat.

9. The Walters family bought 234.82 kg of beef for $2.58 per kg. How much did they pay?

9. 234.82 × 2.58 = 605.8356
The Walters family paid $605.84 for the beef which they bought.

Guiding the Student

- Have the student do the Concluding Activities.
- Help the student check the answers and correct any errors.

Concluding Activities

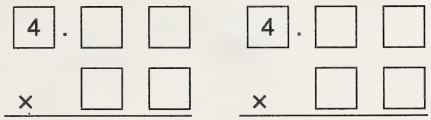
Computer Alternative

1. Do Program 8 "Multi-Maze" on Disk B of *MAC 6.*

Print Alternative

2. Write the digits 2, 8 6, 1 in the empty boxes to make the largest possible and the smallest possible answers. Use each digit only once.

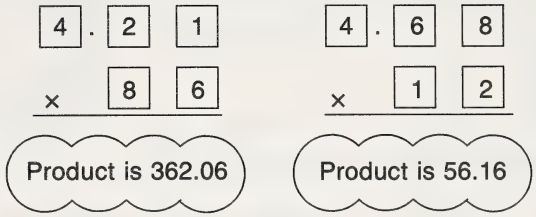
Largest Smallest



Suggested Answers

1. Computer checked.

2. Largest Smallest



3. In the following place decimal points in four different ways to result in four true number sentences.

   a. $124 \times 62 = 7688$

   b. $124 \times 62 = 7688$

   c. $124 \times 62 = 7688$

   d. $124 \times 62 = 7688$

3. a. $12.4 \times 6.2 = 76.88$

   b. $12.4 \times 0.62 = 7.688$

   c. $12.4 \times 62 = 768.8$

   d. $0.124 \times 6.2 = 0.7688$

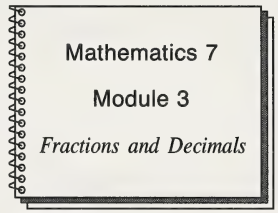
DIVIDING A DECIMAL NUMBER BY A WHOLE NUMBER

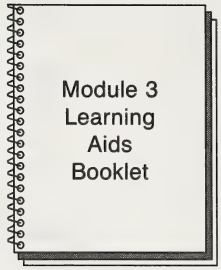
What Lies Ahead

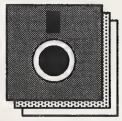
The student will learn to divide a decimal number by a whole number.

Gathering Materials

The student will need these items.







SRA Computer Drill and Instruction;
Mathematics Level D "Decimals"
Lesson 17

Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 18 of the Module Booklet.
- Have the student read "Working Together," do the Learning Aids Activities, Exercise N in Learning Aids Booklet, and check the answers.
- Next have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check answers and correct any errors.

Practice Activities

Computer Alternative

1. If you have a computer, do Lesson 17 of the Decimal disk from the package *SRA Computer Instruction and Drill: Mathematics, Level D.* Read the instructions in the folder before you use the program. Remember if you need help or have an error hold down the SHIFT key and press the ? key.

Print Alternative

Do not use a calculator in Questions 2 to 8.

2. Do an estimate and an exact calculation for each of the following.

   a. $9\overline{)277.2}$

   b. $41\overline{)108.65}$

   c. $\frac{236.8}{74}$

Suggested Answers

1. Computer checked.

2. Estimate — Exact

   a. $270 \div 9 = 30$;

$$\begin{array}{r} 30.8 \\ 9\overline{)277.2} \\ \underline{27} \\ 72 \\ \underline{72} \end{array}$$

   b. $100 \div 50 = 2$;

$$\begin{array}{r} 2.65 \\ 41\overline{)108.65} \\ \underline{82} \\ 266 \\ \underline{246} \\ 205 \\ \underline{205} \end{array}$$

   c. $240 \div 80 = 3$;

$$\begin{array}{r} 3.2 \\ 74\overline{)236.8} \\ \underline{222} \\ 148 \\ \underline{148} \end{array}$$

3. Find the quotient for each of the following. Check your answer by multiplying.

   a. $68.5 \div 2$

   b. $54.8 \div 5$

   c. $584.57 \div 7$

   d. $74.48 \div 7$

4. Write the number of digits in the whole number part of the quotient for each of the following.

   a. $2\overline{)16.8}$

   b. $48\overline{)486.92}$

   c. $25\overline{)75.08}$

3. Quotient Check

   a. 34.25

$$\begin{array}{r} 34.25 \\ \times\ 2 \\ \hline 68.50 \end{array}$$

   b. 10.96

$$\begin{array}{r} 10.96 \\ \times\ 5 \\ \hline 54.80 \end{array}$$

   c. 83.51

$$\begin{array}{r} 83.51 \\ \times\ 7 \\ \hline 584.57 \end{array}$$

   d. 10.64

$$\begin{array}{r} 10.64 \\ \times\ 7 \\ \hline 74.48 \end{array}$$

4. a. 1

   b. 2

   c. 1

5. Position the decimal point so that the quotient is correct.

   a. $7.92 \div 8 = 99$

   b. $50.52 \div 12 = 421$

   c. $2.338 \div 7 = 334$

6. Are the quotients reasonable? Calculate the quotients that are not reasonable.

   a. $9 \overline{)\,18.36}$ — 20.40

   b. $8 \overline{)\,11.04}$ — 1.38

   c. $21 \overline{)\,45.12}$ — 21.43

   d. $35 \overline{)\,2.625}$ — 0.750

5. a. 0.99

   b. 4.21

   c. 0.334

6. a. Estimate $18 \div 9 \doteq 2$. No, quotient is not reasonable.

$$\begin{array}{r} 2.04 \\ 9 \overline{)\,18.36} \\ \underline{18} \\ 36 \\ \underline{36} \end{array}$$

   b. Estimate $11 \div 8 \doteq 1$. Yes, quotient is reasonable.

   c. Estimate $45 \div 21 \doteq 2$. No, quotient is not reasonable.

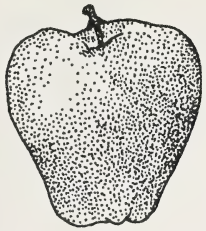
$$\begin{array}{r} 2.14 \\ 21 \overline{)\,45.0} \\ \underline{42} \\ 30 \\ \underline{21} \\ 90 \\ \underline{84} \end{array}$$

$45 \div 21 \doteq 2.14$

   d. Estimate $2 \div 35 = \frac{2}{35}$, but $0.75 = \frac{3}{4}$. No, quotient is not reasonable.

$$\begin{array}{r} 0.750 \\ 35 \overline{)\,2.625} \\ \underline{245} \\ 175 \\ \underline{175} \end{array}$$

7. One dozen apples costs $3.96. What is the cost of one apple?



8. Megan raked a large lawn for $9.00. She worked for 2.25 hours. How much did she receive for one hour's work?

Students may use calculators in Questions 7 to 8.

7. $3.96 \div 12 = 0.33$
The cost per apple is $0.33.

8. $9.00 \div 2.25 = 4.00$
Megan earned $4.00 for one hour's work.

Guiding the Student

- Have the student do the Concluding Activities.
- Help the student check the answers and correct any errors.

Concluding Activities

Use a calculator to find the whole number and remainder answers for each of the following. The first one is done as an example.

1. Use a calculator to find the whole number and remainder answers for the following. The first one is done as an example.

   a. 81 ÷ 5

a.

Key Press	Display
8 1 ÷ 5 =	16.2
− 1 6 =	0.2
× 5 =	1

The whole number and remainder answer is 16 R1.

   b. 127 ÷ 2

b.

Key Press	Display
1 2 7 ÷ 2 =	63.5
− 6 3 =	0.5
× 2 =	1

The whole number and remainder answer is 63 R1.

c. 37 ÷ 4

d. 365 ÷ 8

a.

Key Press	Display
3 7 ÷ 4 =	9.25
− 1 9 =	0.25
× 4 =	1

The whole number and remainder answer is 9 R1.

b.

Key Press	Display
3 6 5 ÷ 8 =	45.625
− 4 5 =	0.625
× 8 =	5

The whole number and remainder answer is 45 R5.

2. Alice has 15 297 nickels. She wants to put the nickels into rolls of 40.

   a. How many rolls will she have?
   Express the answer as a decimal number.

   b. How many full rolls will she have?

   c. How many nickels will be left over?

3. The Jacob family is packing 3200 containers of honey into cases. 24 containers are put in each case.

   a. How many cases do they pack?
   Express the answer as a decimal number.

   b. How many full cases do they pack?

   c. How many containers are left over?

2. a. $15\,297 \div 40 = 382.425$
   Alice will have 382.425 rolls of nickels.

   b. Alice will have 382 full rolls of nickels.

   c. $382.425 - 382 = 0.425$
   $0.425 \times 40 = 17$
   Alice will have 17 nickels left over after she rolls them.

3. a. $3200 \div 24 = 133.33333\ldots$
   The Jacob family packed 133.33333 . . . cases of honey.

   b. The Jacob family packs 133 full cases of honey.

   c. $133.333333 - 133 = 0.33333$
   $0.33333 \times 24 = 7.99992$
   7.9992 is rounded to 8
   The Jacob family has 8 containers of honey left over.

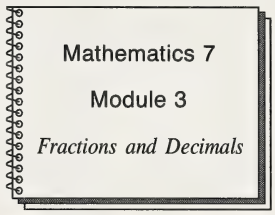
DIVIDING A DECIMAL NUMBER BY A DECIMAL NUMBER

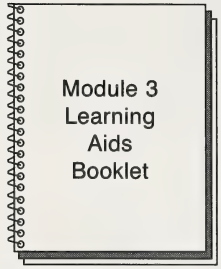
What Lies Ahead

The student will learn to divide a decimal number by a decimal number.

Gathering Materials

The student will need these items.





SRA Computer Drill and Instruction;
Mathematics Level D "Decimals"
Lessons 18, 19, 20

Guiding the Student

- Have the student read the "What Lies Ahead" box in Section 19 of the Module Booklet.
- Have the student read "Working Together," do the Learning Aids Activities, Exercise O in Learning Aids Booklet, and check the answers.
- Next have the student return to the Module Booklet, read "Working Together," and do the Practice Activities.
- Afterwards help the student check answers and correct any errors.

Practice Activities

Do not use a calculator for Questions 1 to 7.

1. Divide the following.

   a. $24 \div 24$

   b. $24 \div 12$

   c. $24 \div 8$

   d. $24 \div 6$

   e. $24 \div 4$

   f. $24 \div 3$

   g. $24 \div 2$

   h. $24 \div 1$

   i. $24 \div 0.5$

   j. $24 \div 0.25$

   k. $24 \div 0.1$

   l. $24 \div 0.01$

Suggested Answers

1. a. 1

   b. 2

   c. 3

   d. 4

   e. 6

   f. 8

   g. 12

   h. 24

   i. 48

   j. 96

   k. 240

   l. 2400

2. a. What pattern did you notice in Question 1? As the divisor decreased what happened to the quotient?

   b. What did you notice about the quotient when the divisor was less than 1? Compare the quotient and dividend.

3. Write the number of digits in the whole-number part of the quotient.

   a. $0.15\overline{)\,0.16}$

   b. $0.15\overline{)\,1.6}$

   c. $1.5\overline{)\,1.6}$

4. Place the decimal point in the quotient to make each statement true.

   a. $17.67 \div 46.5 = 38$

   b. $44.65 \div 1.9 = 235$

   c. $82.28 \div 6.05 = 136$

2. a. As the divisor decreased, the quotient increased.

   b. The quotient is larger than the dividend when the divisor is less than 1.

3. a. 1

   b. 2

   c. 1

4. a. 0.38

   b. 23.5

   c. 13.6

Computer Alternative

5. Do Lessons 18, 19, 20 of the "Decimal" disk from the package *Computer Drill and Instruction: Mathematics, Level D.* (*SRA*). Read the instructions on the folder before using the program. If you need help or have an error hold down the SHIFT key and press the ? key.

5. Computer checked.

Print Alternative

6. Find the quotients.

   a. $3\overline{)15}$, $0.3\overline{)1.5}$, $0.03\overline{)0.15}$

   b. $12\overline{)63}$, $12\overline{)6.3}$, $12\overline{)0.63}$

   c. $20\overline{)67}$, $2.0\overline{)6.7}$, $0.2\overline{)0.67}$

   d. $15\overline{)465}$, $1.5\overline{)4.65}$, $0.15\overline{)4.65}$

6. a. 5, 5, 5

   b. 5.25, 0.525, 0.0525

   c. 3.35, 3.35, 3.35

   d. 31, 3.1, 31

7. Give an estimate for each of the following and then calculate the exact answer where possible. Round the quotient to the nearest hundredth.

   a. $8.67 \div 0.16$

   b. $14.07 \div 6.75$

   c. $\dfrac{3.15}{2.15}$

   d. $\dfrac{14.84}{0.072}$

7. Estimate

   a. $10 \div 0.2 = 50$
   b. $14 \div 7 = 2$
   c. $3 \div 2 = 1.5$
   d. $14 \div 0.07 = 200$

Nearest Hundredth

a. 54.19
b. 2.08
c. 1.47
d. 206.11

Exact

a. $0.16_{\wedge}\overline{)\,8.67_{\wedge}000}$ = 54.187

80
67
64
30
16
140
128
120
112
8

b. $6.75_{\wedge}\overline{)\,14.07_{\wedge}000}$ = 2.084

1350
5700
5400
3000
2700
300

c. $2.15_{\wedge}\overline{)\,3.15_{\wedge}000}$ = 1.465

215
1 000
860
1400
1290
1100
1075
25

d. $0.072_{\wedge}\overline{)\,14.840_{\wedge}000}$ = 206.111

144
440
432
80
72
80
72
80
72
8

8. Are the following quotients reasonable? Calculate those quotients that are not reasonable.

a. $2.5\overline{)47.5}$ $\quad 1.9$

b. $1.2\overline{)10.68}$ $\quad 8.9$

c. $0.9\overline{)63.9}$ $\quad 7.1$

d. $903\overline{)4063.5}$ $\quad 4.5$

8. a. **Estimate** $48 \div 2 = 24$
No, the quotient is not reasonable.

$2.5\overline{)47.5}$ $\quad 19.$

b. **Estimate** $10 \div 1 = 10$
Yes, the quotient is reasonable.

c. **Estimate** $64 \div 1 = 64$
No, the quotient is not reasonable.

$0.9\overline{)63.9}$ $\quad 71.$

d. **Estimate** $4000 \div 1000 = 4$
Yes, the quotient is reasonable.

9. A piece of wood 250 cm long is cut into pieces 12.5 cm long. How many pieces are there?

10. 2.8 kg of raisins are packed in 750 g or 0.75 kg bags. How many bags are filled?

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Students may use calculators in Question 9 to 10.

9. $250 \div 12.5 = 20$
There are 20 pieces of wood each measuring 12.5 cm.

10. $2.8 \div 0.35 = 8$
There are 8 bags of raisins after being packed into 0.35 kg bags.

Guiding the Student

- Next have the student play ''Target Decimals'' in the Concluding Activities. Directions are in the Module Booklet.
- Afterwards discuss the game results with the student.

Concluding Activities

Play "Target Decimals."

Use the following target ranges and beginning decimals. Keep track of your calculator ranges.

	Beginning Decimal	Target Range
1.	5876.5	42.8 - 42.9
2.	100.8	2.1 - 2.2
3.	653.98	3.5 - 3.6

Suggested Answers

Discuss the game results.

SUMMARY

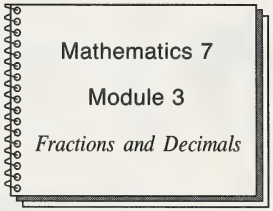
What Lies Ahead

In this summary you will review these skills.

- interpreting place values of digits in a decimal number
- reading a decimal number
- writing a decimal number in standard form and in expanded form
- comparing and ordering decimal numbers
- rounding decimal numbers
- adding, subtracting, multiplying and dividing decimal numbers

Gathering Materials

The student will need these items.



Guiding the Student

- Have the student turn to the summary in the Module Booklet and read the "What Lies Ahead" box and "Working Together."
- Have the student review the skills that have been taught in Sections 12 to 19.
- Then have the student turn to Section 12 and review the pretest and correct any errors he or she may have made at the time.

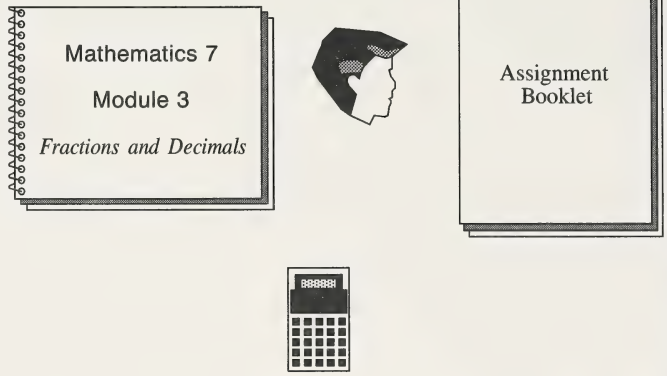
MODULE CONCLUSION

What Lies Ahead

The student is now ready to complete the Module Assignment.

Gathering Materials

The student will need the following items.



Guiding the Student

- Have the student complete the Module Assignment independently. The student may use resource material, but cannot get help. The student should attempt all parts of the assignment.
- Afterwards you should both complete the Declaration. Then you should submit the assignment for a grade and feedback.

Mathematics 7

9MA07P53

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